FINAL TECHNICAL REPORT

USER'S MANUAL FOR FORECAST 90
COMPUTER PROGRAMS

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                                    1815 N. Fort Myer Drive
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Three manuals have been written for the FORECAST 90 Project, a contract jointly funded by the Army and the Defense Advanced Research Projects Agency.

- "A Guide to Network Construction and Utilization"

- "User's Manual for the FORECAST 90 Computer Programs"

- "Programmer's Manual for the FORECAST 90 Computer Programs"

These manuals show how to construct and use networks, how to use the computer programs written for the project, and how to maintain the FORECAST 90 computer programs.

A large number of individuals have contributed significantly to the FORECAST 90 Project. Special mention must be given to Colonel John G. Pappageorge, the project monitor at the Strategic Studies Institute, who formulated the initial concept of FORECAST 90 and followed it through the contract phase with uncommon dedication, insight, and patience. The entire research effort is appreciably better as a result of his many comments, criticisms, and suggestions. Colonel Joseph Pizzi, the Director of the Strategic Studies Institute and Chairman of the Study Advisory Group (SAG), provided assistance and guidance at critical points in the project. Members of and observers to the SAG participated heavily in the research, often raising fundamental questions about the project, and always contributing to a better product. Captain Daryl Steiner and Lieutenant Ron Parker of the ADP Support Group at Carlisle Barracks spent many long hours unraveling the undocumented intricacies of the U.S. Army War College computer system.

CACI's support staff edited and typed draft after draft of the three manuals with unfailing good humor. Particular thanks are due to Carol Franco,

who converted dangling participles and split infinitives into more read-
able prose, and Sharon O'Rourke, who always found some new way to juggle
work loads so that one more part of the three manuals could be completed.
Ann Yamat cheerfully typed most of the drafts, with considerable assis-
tance at critical points from Nancy Streeter. We owe a substantial debt
of gratitude to each of these individuals.

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CACI, Inc., has written and placed 52 networks in computer storage at the U.S. Army War College (USAWC) as part of the Strategic Studies Institute's FORECAST 90 effort. This manual presents a brief overview to the structure and coding of the 52 FORECAST 90 networks. (which are described in greater detail in "A Guide to Network Construction and Utilization") and provides instructions for using the FORECAST 90 computer programs.

Some basic concepts of what a network involves and how it is structured coded, and integrated with other networks are presented first. Next, three ways in which individuals who are unfamiliar with the FORECAST 90 networks might use the computer programs are discussed. Then, two additional uses of the computer programs for individuals who are familiar with the FORECAST 90 networks are presented. The fourth section of the manual presents a more general discussion of the programs, stressing their flexibility, that is directed at the experienced computer user who is also familiar with the FORECAST 90 networks. Finally, extensive documentation on the networks and the coding systems used on the networks is presented in the appendices to this manual.

WHAT ARE THE FORECAST 90 NETWORKS?

The 52 FORECAST 90 networks are a way of looking at the subsequent, or downstream, effects of an action that might occur today. Thus, they provide a means to assess the implications of various policy options that might be taken in response to an event that is significant enough to affect existing relationships between countries. These disruptive events are called "catalytic events" in the FORECAST 90 system, and each FORECAST 90 network is built on the occurrence of a specific catalytic event.

Figure 1 presents an example of the structure of the FORECAST 90 networks. Each network fits this form because each is built on a trend, a determining

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Determining--(not shown)
Factors

Catalytic--(not shown)
Event

Affected--(not shown)
Activity

2nd-Order
Effect ———————————— 0

3rd-Order
Effect ——————— +

1st-Order
Effect

2nd-Order
Effect

3rd-Order
Effect ——————— -

Trend
or
Condition

Determining
Factors

Catalytic
Event

Affected
Activity

1st-Order
Effect

2nd-Order
Effect ———————————— +

3rd-Order
Effect ——————— 0

2nd-Order
Effect

3rd-Order
Effect ——————— +

2nd-Order
Effect ———————————— -

3rd-Order
Effect ——————— 0

1st-Order
Effect

2nd-Order
Effect

3rd-Order
Effect ——————— +

3rd-Order
Effect ——————— -

Affected--(not shown)
Activity

Catalytic--(not shown)
Event

2nd-Order
Effect ———————————— -
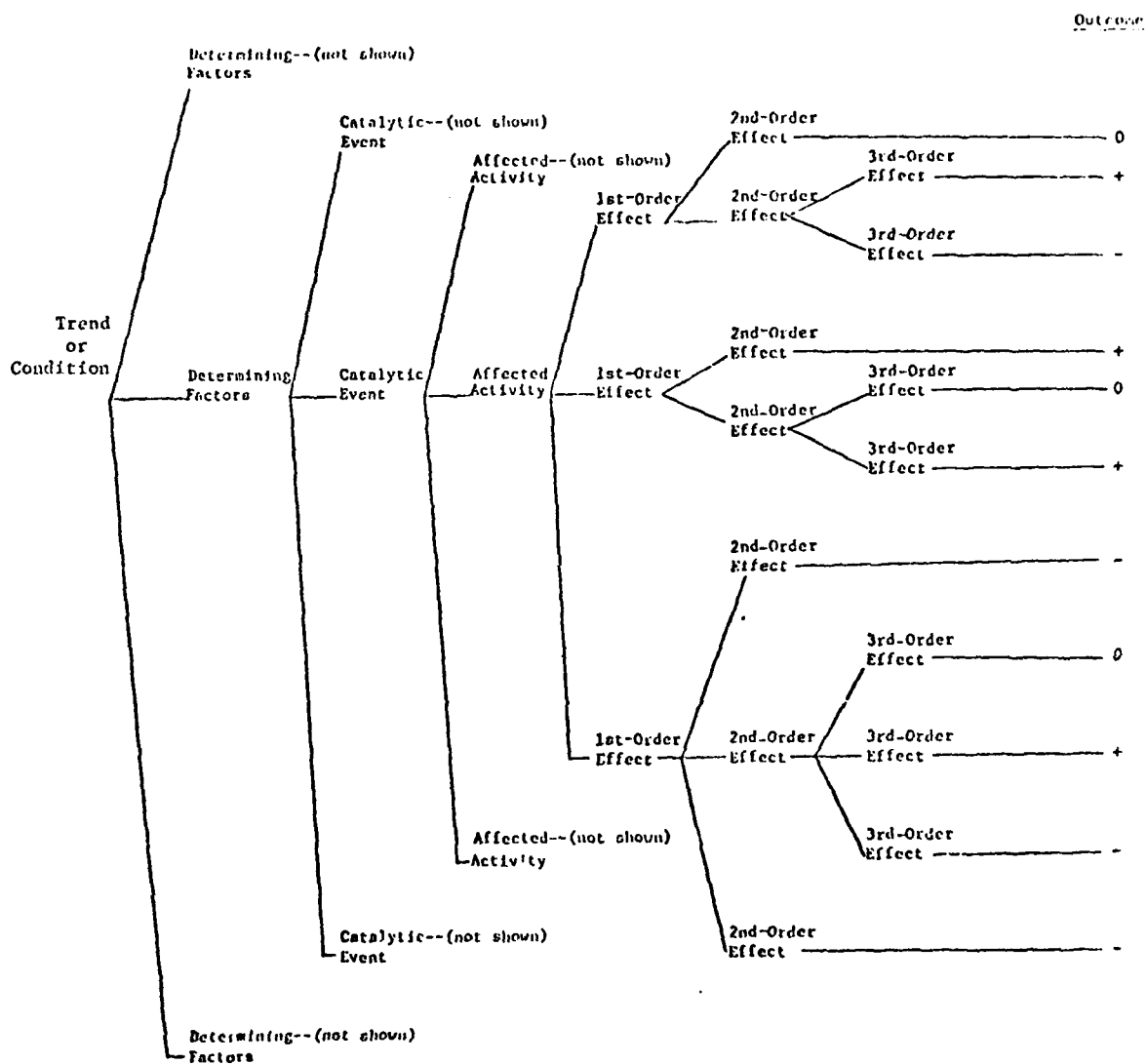
Determining--(not shown)
Factors

Figure 1. The Structure of the FORECAST 90 Networks.

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factor, a catalytic event, five affected activities, one or more first-, second-, and third-order effects, and a series of decisional outcomes. The nets are developed to examine a catalytic event on a major, ongoing trend in world affairs (e.g., detente) for five affected activities-- U.S./USSR relations, U.S./PRC relations, U.S./Japanese relations, U.S./ Western European relations, and U.S./other country relations. The impact of the catalytic event on the trend in each of these five affected activities is filtered through one or more first-, second-, and third-order effects (that is, attempts to envelope plausible responses that the major countries involved in the catalytic event or affected by it might attempt to take). The impact of the entire sequence displayed in Figure 1 is then summarized in the decisional outcome column where the trend under examination can be increased, decreased, or maintained.

Five different trend areas--economic, military, political, socio-economic and technological--have been used to construct the networks. Regardless of the trend involved, all networks have the same structure. The catalytic events that have been networked in the existing 52 trees are listed in Appendix I.

CODING THE NETWORKS

Each distinct point in a network is called a node, and each node is coded with a unique alphabetic and numeric combination. While the structure of the networks and the structure of the codes are consistent across all of the networks, each node in each network is uniquely numbered. Figure 2 attempts to illustrate these points by displaying the structure of the code for the nodes for a hypothetical political tree.

The code for each network begins with a letter designating whether it is an economic (E), military (M), political (P), socio-psychological (S), or technological (T) tree. Once the subject area of the network is designated, two digits are added to the code for the determining condition. Two additional digits are added for the catalytic event. One digit each is

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added for the affected activities, the first-, second-, and third-order effects. The network code ends with a unique one-letter and three-digit designation for each decisional outcome. Using the information given in Figure 2, the node numbers for each point in the network can be written as in Table 1.

TABLE 1

Sample Code Designations

Level of the Tree	Full Node Designation
Trend	P01.
Determining Factors	P0101.
Catalytic Event	P010101.
Affected Activities	P0101011.
First-order Effects	P01010111.
	P01010112.
Second-order Effects	P010101111.
	P010101112.
Third-order Effects	P0101011111. ·
	P0101011112.
Decisional Outcomes	P0101011111.H001
	P0101011111.H002

Three characteristics of the coding system should be noted. First, each network is stored in the USAWC computer system under the number of its catalytic event. Hence, to reference a computer-stored network, the user must know the number of its catalytic event.[1] For easy reference, the network number and the catalytic event for each network are listed, by category of subject matter, in Appendix I of this manual. Thus, should any potential user of the FORECAST 90 nets ever need to know the number of a specific network, Appendix I will give this information.

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[1] See Chapter 3 of "A Guide to Network Construction and Utilization."

P01 —— P0101 —— P010101

P0101011
P0101012
P0101013
P0101014
P0101015

P01010111
P01010112
P01010121
P01010122

P010101111
P010101112
P010101121
P010101122

P0101011111
P0101011112
P0101011121
P0101011122

P0101011111#001
P0101011112#002
P0101011121#003
P0101011122#00-

THE REST OF THE NETWORK IS OMITTED. HOWEVER, THE SAME
CODING RULES ARE APPLIED.

| Trend | Determining Factor | Catalytic Events | Affected Activities | First-Order Effects | Second-Order Effects | Third-Order Effects | Decisional Outcomes |

Figure 2. An Example of the Network Coding System from Trend to Decisional Outcomes.

Second, each network employs a standard referencing procedure for the five affected activities on which the networks are focused. These codes, as noted in Figure 2, are standardized as follows:

- U.S./USSR relations = 1

- U.S./PRC relations = 2

- U.S./Japanese relations = 3

- U.S./Western Europe relations = 4

- U.S./other country relations = 5

Regardless of the network that is being used, the code for the section of the tree on relations between the United States and the Soviet Union will _always_ end in 1.

Third, the node numbers are unique to each node and must be treated as such. Hence, if any digit in the node number is transposed or omitted, the user will not obtain the node that is being sought. Moreover, if the period—as demonstrated in Table 1—is omitted, the user will not receive the node that is being sought. It is extremely important to enter the node _exactly_ since any variation will create errors.

EQUIVALENCE CODING

In addition to a code for each node in the networks, a second code was developed for each of the first-, second-, and third-order effects in each network. A similar code was developed for each catalytic event that has been networked. The purpose of these codes is to help find cross-over points to permit the user to cross over from one network to another when occurrences in one of the networks have implications for occurrences in a second network.

In developing the equivalence code, seven pieces of information were coded for the contents of the node to attempt to summarize the occurrences there.

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- The first actor (the primary initiator of the actions described in the node).

- The second actor (the secondary initiator of the actions described in the node).

- The action taken in the node (activities described in this specific node).

- The first target (the country toward which the action in the node is primarily directed).

- The second target (the country toward which the action in the node is secondarily directed).

- Geographic region (where the action described in the node occurred).

- Substantive topic (subject about which the exchange described in the node occurred).

This information has been coded for each first-, second-, and third-order effect in each network. The codes used can be found in Appendices III through VI of this manual.[2]

Once the nodes were coded for these seven pieces of information, equivalence was sought to find nodes that had the same actor, action, target, geographic region, and substantive topic. Once commonly structured nodes were found, they formed cross-over points that were used to link different networks. Figure 3 displays two unrelated networks that have commonly structured nodes (designated by letters). Figure 4 shows the use of the cross-over points to join—or "integrate"—the two separate networks.

All of the 52 networks currently available for FORECAST 90 have been examined for cross-over points and integrated. Where a node in one network crosses to another node in a second network, a particular statement—called a GO TO statement—is used to designate the occurrence. Thus, when the user prints a part of a network on the computer he may see GO TO

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[2] A more detailed discussion of network integration is found in Chapter 4 of "A Guide to Network Construction and Utilization."
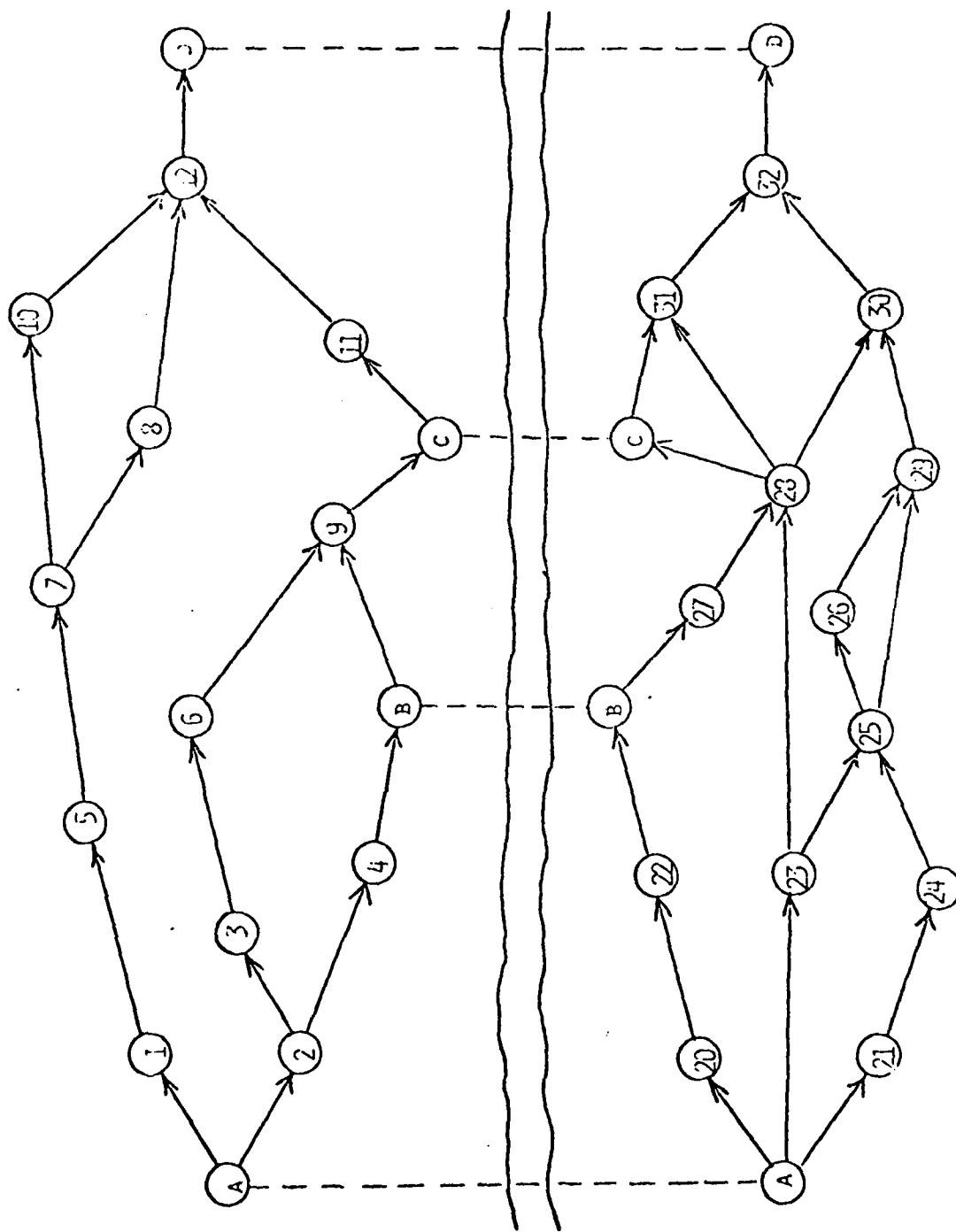
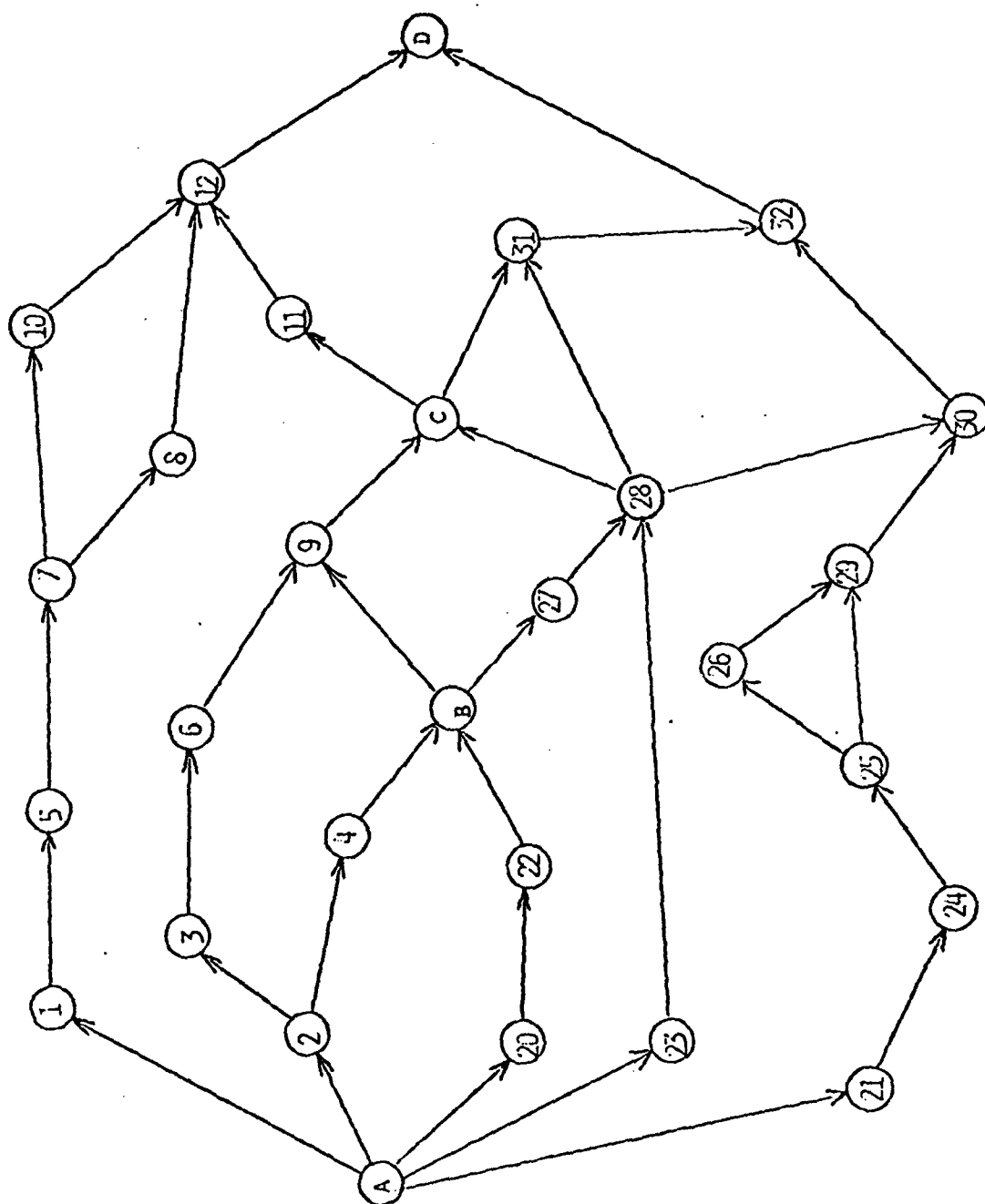Figure 3. Two Distinct Networks with Potential Cross-Over Points

Figure 4. Two Integrated Networks

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statements at one or more nodes that are followed by a number. The number given refers to the location in the same tree or in another tree to which the first node is to branch. Additionally, at the end of each printing of a network section, the user can obtain a list of the GO TO statements encountered in the printing. This list of statements shows where the cross-overs have occurred and indicates what trees should be examined to print the nodes to which the cross-overs have been made.

USING THE COMPUTER PROGRAMS

The FORECAST 90 computer programs can perform a variety of manipulations on the networks. The three most important of these manipulations are the following:

- The networks can be printed so that someone who is unfamiliar with the networks can obtain a listing of what networks are available.

- The networks can be printed out from varying starting points so that the user can track the downstream implications of a catalytic event.

- The networks can be searched for the occurrence of equivalently structured actions (the same actor, action, target, region, and substantive topic) that the user has specified are of interest to him.

Monitoring Network Availability

The user can obtain a list of the networks that are available or a list of the networks that deal with specific topics by following the procedures that are given in sequence 1 of the next section of this manual. Alternatively, a listing of the information available on the first 52 networks is presented in Appendix II of this manual. If the user does elect to monitor the available networks, information in the form shown in Table 2 will be obtained.

TABLE 2

Sample Listing of the Tree Summary File (TSF)

Tree Number	Tree Author	Date Created (Yr., Month, Day)	Date Modified (Yr., Month, Day)	Number of Nodes	Actor Code	Substantive Area Code	Region Code	
E012101	CACI	752307	750707	101	691	14	05	OIL EMBARGO AGAINST WESTERN STATES BY MIDDLE EASTERN COUNTRIES.
E012101								OIL EMBARGO AGAINST WESTERN STATES BY MIDDLE EASTERN COUNTRIES.
E012102	CACI	752307	750707	133	082	14	01	US GRAIN EMBARGO.
E012102								US GRAIN EMBARGO.
E012103	CACI	752307	750707	154	397	14	03	EEC ATTEMPTS TO BECOME RESOURCE INDEPENDENT BY TRADE PACTS WITH LDCS.
E012103								EEC ATTEMPTS TO BECOME RESOURCE INDEPENDENT BY TRADE PACTS WITH LDCS.
E012104	CACI	752307	752707	84	596	14	02	CARTELIZATION OF COPPER.
E012104								CARTELIZATION OF COPPER.
E012201	CACI	752307	750707	113	740	14	07	JAPAN-USSR TRADE/AID PACTS TO DEVELOP SOVIET ENERGY SOURCES.
E012201								JAPAN-USSR TRADE/AID PACTS TO DEVELOP SOVIET ENERGY SOURCES.
E012301	CACI	752307	752707	173	397	14	03	EUROPEAN ECONOMIC INTEGRATION.
E012301								EUROPEAN ECONOMIC INTEGRATION.
E012302	CACI	752307	752707	39	002	02	01	SEVERE ECONOMIC RECESSION OCCURS IN THE US.
E012302								SEVERE ECONOMIC RECESSION OCCURS IN THE US.
E012401	CACI	752307	752707	133	997	12	03	LDC'S PRESSURE DEVELOPED COUNTRIES FOR NEW AID SYSTEM.
E012401								LDC'S PRESSURE DEVELOPED COUNTRIES FOR NEW AID SYSTEM.
E012501	CACI	752307	752707	101	397	14	03	EEC BREAKS DOWN FROM STRAINS OVER RESOURCE AVAILABILITY.
E012501								EEC BREAKS DOWN FROM STRAINS OVER RESOURCE AVAILABILITY.
M012101	CACI	752307	750707	78	365	17	04	USSR EXPANDS STRATEGIC WEAPONS, SEEKS FIRST STRIKE CAPABILITY.
M012101								USSR EXPANDS STRATEGIC WEAPONS, SEEKS FIRST STRIKE CAPABILITY.
M012201	CACI	752307	750707	137	602	07	03	MBFR UNSUCCESSFUL. CONGRESS MANDATES 50,000 TROOP WITHDRAWAL.
M012201								MBFR UNSUCCESSFUL. CONGRESS MANDATES 50,000 TROOP WITHDRAWAL.
M012301	CACI	752307	752707	54	002	07	00	US LOSES BASE/TRANSIT RIGHTS IN SOUTHERN EUROPE AND MIDDLE EAST.
M012301								US LOSES BASE/TRANSIT RIGHTS IN SOUTHERN EUROPE AND MIDDLE EAST.
M012302	CACI	752307	752707	172	002	07	07	US LOSES BASE/TRANSIT RIGHTS IN JAPAN AND OKINAWA.
M012302								US LOSES BASE/TRANSIT RIGHTS IN JAPAN AND OKINAWA.
M012303	CACI	752307	752707	173	002	07	07	US LOSES BASE/TRANSIT RIGHTS IN THAILAND, TAIWAN, AND PHILIPPINES.
M012304	CACI	752307	752707	173	002	17	01	US NAVAL CAPABILITY INCREASED WITH SURFACE EFFECT SHIPS.
M012305	CACI	752307	752707	93	002	17	01	IMPROVED LOGISTICAL CAPABILITIES PERMIT RAPID US BASING ALMOST ANYWHERE

Printing the Networks

Each network can be printed from different starting points in several ways. To print the networks, the user should follow the procedures listed in sequence 1 or sequence 2 shown in the next section of the manual. Before the network can be printed, the user must specify (1) the number of the network that is to be printed (information contained in Appendix I) and (2) the node that is to be used to start the printing (information that can be obtained through an inspection of Figure 2).

Many of the networks are quite long and some take a great deal of time to print. Hence, before deciding to print a network the user should consider what it is he wants to obtain. If a view of the whole network is desired, file copies of each of the 52 nets are available in the USAWC library. A user might want to examine the network file copies to see whether a particular network deals with the questions that are interest.

Based on that examination, the user might concluded that only one section of the network--for example, U.S./USSR relations--contains information that he wants and only that section needs to be printed. Second, the user should consider where the network is to be printed once he has decided to print it. This question requires serious consideration since the networks are often long. One option is to print at the terminal from which the program is being run. A second option is to have the output printed on the high-speed printer located in room B219 of Bliss Hall. The terminals are slow printers. Hence, the user should consider whether longer trees should be printed at the terminal. Once the user decides where to print the network, the instructions that begin in the next section of the manual show how to obtain the output at either the terminal or the high-speed printer.

Regardless of which location is used for network printing, the sections of the tree are printed as shown in Figure 2. The user must cust and reassemble the pieces of the printout to render it into the network form seen in Figure 1 or in the file copies at the USAWC library. Figure 2
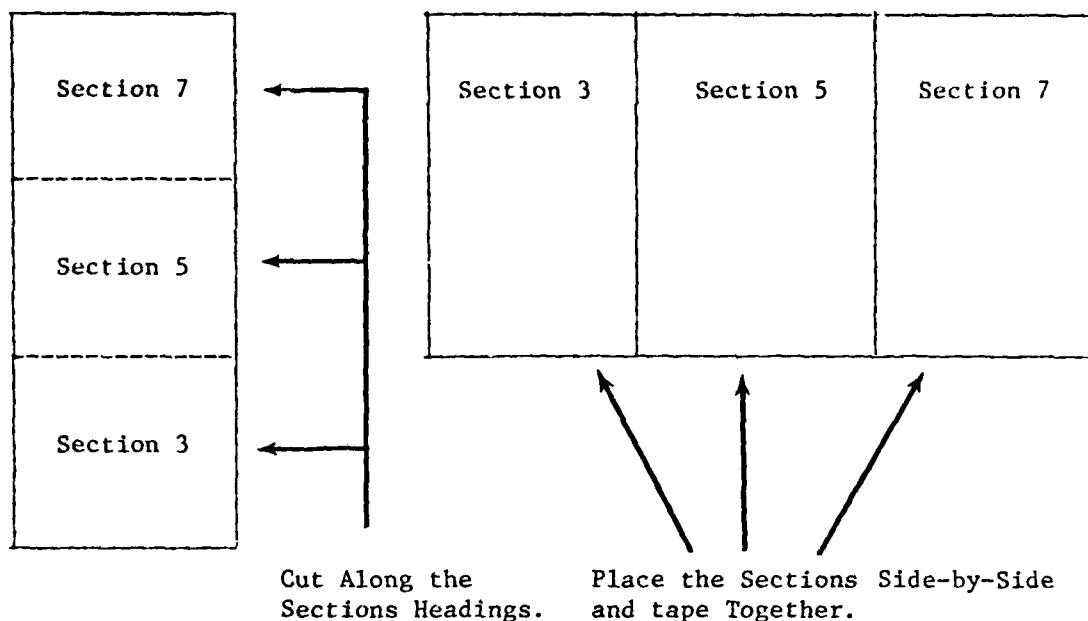
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Cut Along the   Place the Sections Side-by-Side
Sections Headings.   and tape Together.

Figure 2.   Sample of Network Printout

shows how this is done. Cut in this manner, the output will resemble the
more familiar network form.

Searching for Equivalent Sequences in the Networks

Each network can be searched for a particular user-specified action sequence.
Once the user decides on the combination of actor, action, target, geogra-
phic region, and substantive topic that he wishes to search for Appendices
III through VI should be consulted to obtain the appropriate numeric codes.
From that point onward, the user simply follows the directions given in
sequence 3 presented in the next section of this manual. By following
these directions, the user will obtain a printout listing the numbers of the
nodes with the same equivalence code as the sequence that he specified.
Table 3 presents the form of that output. These nodes can then be used as
starting points to print the trees as directed in sequence 3.

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TABLE 3

Sample Equivalence Search Printout

P010101112	002/13/365/1/05
E01020211	002/13/365/1/05
M010301221	002/13/365/1/05
M010101011	002/13/365/1/05
S010402311	002/13/365/1/05

The nodes presently in the trees...   with the sequence that the user
specified.

This section presents three basic instruction sequences that a new user of the FORECAST 90 programs might wish to employ on the networks currently stored at the USAWC. These three basic sequences are set out as a set of questions and answers. Depending upon the answers that one gives to the various questions, the user is referred to additional blocks of directions that present the commands that the computer will give and the answers that the user must enter in return. By simply following the commands listed in these sequences and responding as noted, the user will be able to run the FORECAST 90 programs successfully.

Three basic sequences are presented in this section:

- A sequence to monitor.

- A sequence to print a tree and cross from one tree to another.

- A sequence to search for a specific kind of behavior in any of the networks and to print a network in which the behavior occurs.

Each sequences is written as direct questions and answers. However, it is important that the user familiarize himself with the whole sequence before beginning any part of it. Such familiarization will permit the user to decide in advance what it is that he wants to obtain from the networks.

SEQUENCE #1: OBTAIN INFORMATION ON THE AVAILABLE NETWORKS AND PRINT A NETWORK

1. Do you want to see a listing of the nets that are available, together with some basic information on each network?

    YES: Continue to question #2.

    NO: The networks are listed with the appropriate
          information in Appendix II.

2. Do you want to see the information for all networks that are available or do you want to see the information for a specific type of network?

    ALL NETWORKS: Refer to Direction Block A (located on page 17).

    A SPECIFIC TYPE OF NETWORK: Refer to Direction Block B (located on page 18),

DIRECTION BLOCK A
(To List All Networks)

a. Sign on at the terminal. The directions for signing on are located at the terminal.

b. Once you have signed on, the terminal will give a set of questions. You must respond as noted in this direction block.

The computer will print...	You must respond...
SYSTEM?	YFOR
OLD OR NEW?	OLD
OLD FILE?	/CACI/NET4
READY	
*	RUN=(CORE=25K)
INPUT COMPLETE 52 RECORDS READ	
ENTER OPTION	ALL

c. The terminal will obtain a listing of the current networks in the same form as that listed in Appendix II. When all are printed, the computer will ask

ENTER OPTION	STOP

d. Now, return to question 3 in sequence 1 (located on page 19) and proceed.

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DIRECTION BLOCK B

(To List a Specific Type of Network)

a. To search for a specific type of network, you must formulate precisely what it is that the computer is to search for. Hence, decide in advance

1. What key actor involved in the catalytic event you want searched for. Refer to Appendix III for the actor codes.

2. What key substantive topic in the catalytic event you want searched for. Refer to Appendix V for the substantive topic codes.

3. What key geographic region in which the catalytic event has occurred that you want searched for. Refer to Appendix VI for the geographic region codes.

b. After selecting the _single_ actor, substantive topic and geographic region that are of interest, sign on at the terminal. The directions for signing on are located at the terminal.

c. Once you have signed on, the terminal will give a set of questions. You must respond as noted in this direction block.

The computer will print...	You must respond...
SYSTEM?	YFOR
OLD OR NEW?	OLD
OLD FILE?	/CACI/NET4
READY	
*	RUN=(CORE=25K)
INPUT COMPLETE 52 RECORDS READ	
ENTER OPTION	DIS
The computer will print a menu of options and end with	
ENTER SELECTION OPTION	ACT
ENTER ACTOR	You enter the 3-digit code chosen from Appendix III--e.g., 002.
ENTER SELECTION OPTION	SUB
ENTER SUBSTANTIVE AREA	You enter the 2-digit code chosen from Appendix V--e.g., 01.
ENTER SELECTION OPTION	REG
ENTER REGION	You enter the 2-digit code chosen from Appendix VI--e.g., region 1=01
ENTER SELECTION OPTION	NO

d. The computer will now print a list of the networks whose catalytic event has the same actor, substantive topic and geographic region as you have indicated. After printing the results it will give the number of networks that match the information that you gave it. It will then ask for another option.

3 MATCHES	
ENTER SELECTION OPTION	END
ENTER OPTION	_STOP_

e. Now, return to question 3 in sequence 1 (located on page 19) and proceed.

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3. Now that you have obtained information on the available networks or on a specific network, do you want to print a tree?

    YES: Continue to question #4.

    NO: File copies of all of the networks are located in
           the USAWC library. You may wish to examine one
           there.

4. If you want to print a network, do you know the number under which the network is stored in the computer?

    YES: Continue to question #5.

    NO: Refer to Appendix I to obtain the number under
           which the network is stored. When you have found
           the network number, then continue to question # 5.

5. Where do you want to print the network that you want to examine?

    AT THE TERMINAL THAT YOU ARE USING: Refer to Direction
    Block C (located on page 20).

    AT THE HIGH-SPEED PRINTER IN ROOM B219 BLISS HALL:
    Refer to Direction Block D (located on page 21).

a. [illegible text]

b. [illegible text] as follows:

[illegible]	YES
OLD [illegible]	OLD
OLD [illegible]	/(NULL??)
READY	
*	RUN([illegible]), [illegible]
NON-FATAL [illegible] * MISSING [illegible]	
THE NEXT [illegible]	
POSITION [illegible]	
OUTPUT AT THE [illegible]	YES
ENTER [illegible]	You enter the [illegible] character al-anumeric sequence to identify the file as listed in Appendix I. For example, M010101.
The computer repeats what you have told it. For example, M010101	
OK?	OK (or NO)
INPUT FINISHED NO. NODES-?.	
NODE/LEVEL: 1 2 3 5 7 11 14 19	
ENTER INITIAL NODE	You enter the specific node number that you want to start with (as shown in Figure 2). For example, M010111. Recall that each section of the network is numbered differently: 1=US/USSR; 2=US/PRC; 3=[illegible]; 4=US/West Europe; 5=US/other Country.
ENTER OPTION	FOR

c. The computer will print the network section requested in the format shown in Figure 5. It will then ask

LOOK AT GO TO'S	YES

d. The computer will print the equivalence cross-over to other networks or to other sections of the same network. It then asks

ENTER INITIAL NODE	(1) If you want to print another part of the same network--e.g., US/PRC relations--that code number should be entered M010102. Then, follow the instructions from the command FOR.
	(2) If you do not want to print any more of this network, hit the return key.
	RETURN
ENTER OPTION	STOP

e. You have now completed sequence #1--monitoring the existing networks, selecting one, and printing the network at the terminal.

a. If you have already typed in a time-sharing processor for this period ...

b. The computer will ask a sequence of questions, to which you respond as follows:

SYSTEM?	YES
OLD OR NEW?	OLD
OLD FILE?	/CNO/N:11
READY	
*	RUN (...)
NON-FATAL ERROR * ...	
THE NEXT PROGRAM ...	
PORTIONS OF A ...	
QUIET AT THE ...	NO
ENTER TREE	You enter the 7-character, alphanumeric sequence to identify the tree as listed in Appendix 1. For example, MO1C1S1.
The computer repeats what you have told it. For example, MO1C1S1.	
OK?	OK (or NO)
INACT FINISHED NO. NODES = 5.	
NODE/LEVEL: 1 1 1 5 7 11 14 14	
ENTER INITIAL NODE	You enter the specific node number that you want to start with, as shown in Figure 13. For example ... Recall that each section of the network is a ... for receiver: 1=US; USSR; 2=... Europe; 5=US/other country.
ENTER OPTION	FOR

c. The computer will print the network section requested in the format shown in Figure 5. It will then ask

LOOK AT GO TO'S	YES

d. The computer will print the equivalence cross-overs to other networks or to other sections of the same network. It then asks

ENTER INITIAL NODE	(1) If you want to print another part of the same network, e.g., US/PRC relations--that code number should be entered MO1O1O1?. Then, follow the instructions from the command FOR.
	(2) If you do not want to print any more of this network, hit the return key.
	RETURN
ENTER OPTION	STOP

e. The computer will print a number that will enable you to identify your output at the high-speed printer.

SNUMB #99999T

f. Take the number that you receive to room B219 Bitoo Hall and pick up your printout there. You have now completed sequence #1--monitoring the existing networks, selecting one, and printing the network at the high-speed printer.

SEQUENCE #2.   PRINT A NETWORK AND CROSS OVER FROM ONE NETWORK TO ANOTHER

1. Do you know the number of the network that you want to print?

> YES: Continue to question #2.

> NO: Refer to Appendix I to obtain the network number.

2. Do you know what part of the network that you want to print?

> YES: Continue to question #3.

> NO: Refer to the section on network coding, especially
>   Figure 2.

3. Where do you want to print the network that you want to examine?

> AT THE TERMINAL THAT YOU ARE USING: Refer to Direction
> Block E (located on page 23).

> AT THE HIGH-SPEED PRINTER IN ROOM B219 BLISS HALL:
> Refer to Direction Block F (located on page 24).

a. Sign on at the terminal. The directions for signing on are located at the terminal. If you have already signed on and are continuing with a program, begin with the command SYSTEM. Then, follow the sequence in b.

b. The computer will ask a sequence of questions, to which you respond as follows:

SYSTEM?	YFOR
OLD OR NEW?	OLD
OLD FILE?	/CACI/NET1
READY	
*	RUN=(CORE=31K,ULIB)LIBRARY/USERLIB,R

NON-FATAL ERROR * MISSING ROUTINE .FFPC

THE NET1 PROGRAM ALLOWS YOU TO PRINT

PORTIONS OF A SPECIFIED TREE.

| OUTPUT AT TERMINAL? | YES |
| ENTER TREE | You enter the 7-character alphabetic-numeric sequence to identify the tree as listed in Appendix I. For example, M010101. |

The computer repeats what you have told it. For example, M010101.

| OK? | OK (or NO) |

INPUT FINISHED NO. NODES = 54

NODE/LEVEL: 1 1 1 5 7 11 14 14

| ENTER INITIAL NODE | You enter the specific node number that you want to start with (as shown in Figure 2). For example M0101011. Recall that each section of the network is numbered differently: 1=US/USSR; 2=US/PRC; 3=US/Japan; 4=US/West Europe; 5=US/Other Country. |

c. The computer will print the network section requested in the format shown in Figure 5. It will then ask

| LOOK AT GO TO'S | YES |

The programs merely display the GO TO'S. You must proceed to the remaining questions to cross over.

d. The computer will print the equivalence cross-overs to other networks or to other sections of the same network. It then asks

ENTER INITIAL NODE	(1) If you want to print another part of the same network--e.g., US/PRC relations--that code number should be entered M0101012.
	(2) If you do not want to print any more of this network, hit the return key.
	RETURN
ENTER OPTION	STOP

e. Proceed to Question 14.

a. Sign on at the terminal. The directions for signing on are located at the terminal.

b. The computer will ask a sequence of questions, to which you respond as follows:

SYSTEM?	YFOR
OLD OR NEW?	OLD
OLD FILE?	/CACI/NET1
READY	
*	RUN (CORE=31K,PLIB)LIBRARY/USERLIB,R

NON-FATAL ERROR * MISSING ROUTINE .FPEC

THE NET1 PROGRAM ALLOWS YOU TO PRINT

PORTIONS OF A SPECIFIED TREE.

OUTPUT AT TERMINAL?	NO
ENTER TREE	You enter the 7-character alphabetic-numeric sequence to identify the tree as listed in Appendix 1. For example, M010101.
The computer repeats what you have told it. For example, M010101.	
OK?	OK (or NO)

INPUT FINISHED NO. NODES = 54

NODE/LEVEL: 1 1 3 5 7 11 14 14

ENTER INITIAL NODE	You enter the specific node number that you want to start with (as shown in Figure 2). For example M0101011. Recall that each section of the network is numbered differently: 1=US/USSR; 2=US/PRC; 3=US/Japan; 4=US/West Europe; 5=US/Other Country.
ENTER OPTION	FOR

c. The computer will print the network section requested in the format shown in Figure 5.

LOOK AT GO TO'S	YES

d. The computer will print the equivalence cross-overs to other networks or to other sections of the same networks. It then asks

ENTER INITIAL NODE	(1) If you want to print another part of the same network--e.g., US/PRC relations--that code number should be entered. For example, P010901. Then, follow the instructions from the command FOR.
	(2) If you do not want to print any more of this network, hit the return key.
	RETURN
ENTER OPTION	STOP

e. The computer will print a number that will enable you to identify your output at the high-speed printer.

SNUMB #9997T

f. Take the number that you receive to room B219 Blinn Hall and pick up your printout there. You should then turn to the fourth question of sequence #2.

4. Are there any GO TO statements referring you to another tree listed
   in the section of the network that you printed?

     YES: Continue to question #5.

     NO: Since there are no cross-overs, you are through
             with this sequence unless you try another section
             of the network that you are using or another network.

5. Do you want to select one of the networks listed in the GO TO state-
   ments to cross over to?

     YES: Continue to question #6.

     NO: Since you do not want to cross over, you have
             completed this sequence.

6. Where do you want to print the network that you want to cross over to?

     AT THE TERMINAL THAT YOU ARE USING: Refer to Direction
   Block G (located on page 26).

     AT THE HIGH-SPEED PRINTER IN ROOM B219 BLISS HALL:
   Refer to Direction Block H (located on page 27).

DIRECTION BLOCK C

(To Print a Cross-Over at the Terminal)

a. If you have already signed on and run a program, enter the command
    SYSTEM. Then follow the sequence given in b. If you are beginning
    the sequence anew, begin by signing on. The instructions for signing
    on are located at the terminal.

b. The computer will ask a sequence of questions, to which you respond
    as follows:

SYSTEM?	YFOR
OLD OR NEW?	OLD
OLD FILE?	/CACI/NET1
READY	
*	RUN=(CORE=31K,UL1B)LIBRARY/USERLIB,R
NON-FATAL ERROR * MISSING ROUTINE .FFBC	
THE NET1 PROGRAM ALLOWS YOU TO PRINT	
PORTIONS OF A SPECIFIED TREE.	
OUTPUT AT TERMINAL?	YES
ENTER TREE	You enter the 7-character alphabetic-numeric sequence to identify the tree as listed in Appendix 1. For example, M010101.
The computer repeats what you have told it. For example, M010101	
OK?	OK (or NO)
INPUT FINISHED NO. NODES-54	
NODE/LEVEL: 1 1 1 5 7 11 14 14	
ENTER INITIAL NODE	You enter the specific node number that you want to start with (as shown in Figure 2). For example, M0101011. Recall that each section of the network is numbered differently: 1=US/USSR; 2=US/PRC; 3=US/Japan; 4=US/West Europe; 5=US/Other Country.
ENTER OPTION	FOR

c. The computer will print the network section requested in the format
    shown in Figure 5. It will then ask

LOOK AT GO TO'S	YES

d. The computer will print the equivalence cross-over to other networks
    or to other sections of the same network. It then asks

ENTER INITIAL NODE	(1) If you want to print another part of the same network--e.g., US/PRC relations--that code number should be entered M0101012. Then, follow the instructions from the command FOR.
	(2) If you do not want to print any more of this network, hit the return key.
	RETURN
ENTER OPTION	STOP

e. You have now completed sequence #2--monitoring the existing networks,
    selecting one, and printing the network at the terminal.

DIRECTION BLOCK II

(To Print a Cross-Over at the High Speed Printer)

a. If you have already signed on and run a program, enter the command SYSTEM. Then, follow the sequence given in b. If you are beginning the sequence anew, begin by signing on. The instructions for signing on are located at the terminal.

b. The computer will ask a sequence of questions, to which you respond as follows:

SYSTEM?	YFOR
OLD OR NEW?	OLD
OLD FILE?	/CACI/NET1
READY	
*	RUN=(CORE=31K,ULIB)LIBRARY/USERLIB,R

NON-FATAL ERROR * MISSING ROUTINE .FFBC

THE NET1 PROGRAM ALLOWS YOU TO PRINT

PORTIONS OF A SPECIFIED TREE.

OUTPUT AT TERMINAL?	NO
ENTER TREE	You enter the 7 character alphabetic-numeric sequence to identify the tree as listed in Appendix I. For example, M010101.
The computer repeats what you have told it. For example, M010101.	
OK?	OK (or NO)

INPUT FINISHED NO. NODES = 54

NODE/LEVEL: 1 1 1 5 7 11 14 14

ENTER INITIAL NODE	You enter the specific node number that you want to start with (as shown in Figure 2). For example M0101011. Recall that each section of the network is numbered differently: 1=US/USSR; 2=US/PRC; 3=US/Japan; 4=US/West Europe; 5=US/Other Country.

c. The computer will print the network section requested in the format shown in Figure 5. It will then ask

LOOK AT GO TO'S	YES

d. The computer will print the equivalence cross-overs to other networks or to other sections of the same network. It then asks

ENTER INITIAL NODE	(1) If you want to print another part of the same network--e.g., US/PRC relations--that code number should be entered M0101012. Then, follow the instructions from the command FOR.
	(2) If you do not want to print any more of this network, hit the return key.
	RETURN
ENTER OPTION	STOP

e. The computer will print a number that will enable you to identify your output at the high-speed printer.

SNUMB #9999T

f. Take the number that you receive to room B219 Bliss Hall and pick up your printout there. You have now completed sequence #2--printing a network and crossing-over to another network.

SEQUENCE #3:   SEARCH FOR AN EQUIVALENT SEQUENCE AND PRINT A NETWORK

1. Do you know what equivalence sequence you want searched?

    YES: Continue to question #2.

    NO: Formulate the equivalence sequence that you are
           interested in as directed in the section of this
           manual on equivalence coding.   Then continue to
           question #2.

2. Do you know the codes for the actor, action, target, substantive topic
and geographical region *that you want to search for*?

    YES: Continue to question #3.

    NO: Refer to Appendices III through VI for the
           appropriate codes.   Then continue to question #3.

3. Do you want to do more than one search in this run?

    YES: *Continue to question #4.*

    NO: Refer to Direction Block I (located on page 29).

4. Do you know the codes for the second sequence that you want to search
for?

    YES: Refer to Direction Block I (located on page 29).

    NO: Refer to Appendices III through VI for the appro-
           priate codes.   Then refer to Direction Block I
           (located on page 29).

DIRECTION BLOCK 1

(To Search for an Equivalent Sequence)

a. Sign on at the terminal. The directions for signing on are located
    at the terminal. If you have already signed on and run a program,
    enter the command SYSTEM. Then, follow the sequence given in b.

b. Once you have signed on, the terminal will give a set of questions.
    You must respond as noted in this direction block.

The computer will print...	You must respond...
SYSTEM?	YFOR
OLD OR NEW?	OLD
OLD FILE?	/CACI/NET3
READY	
*	RUN=(CORE=25K)
WANT HELP	YES
SELECT ONE ATR (i.e., actor)	You enter the 3-digit number for your actor--e.g., 002
SELECT ONE ACT (i.e., action)	You enter the 3-digit number for your action--e.g., 015
SELECT ONE TAR (i.e., target)	You enter the 3-digit number for your target--e.g., 365
SELECT ONE REG (i.e., geog. region)	You enter the 3-digit number for your geographic region--e.g., 001
SELECT ONE SUB (i.e., substantive topic)	You enter the 3-digit number for your substantive topic--e.g., 002

c. The computer then prints a summary of the information that it was
    given and the list of all nodes with that same sequence of numbers.

    002 15 365 1 02

    P010101412 002 15 365 1 02
    E0203051111 002 15 365 1 02
    E0203051112 002 15 365 1 02
    E020304115 002 15 365 1 02
    M0102031234 002 15 365 1 02

    5 MATCHES.

d. The computer then asks if you want it to search again. If you want
    another search, respond YES. Otherwise, enter NO.

    ADDITIONAL SEARCHES   NO

e. Proceed to sequence #3, question #5.

5. Have any equivalent nodes been found in the search?

    YES: Continue to question #6.

    NO: You have reached an endpoint <u>unless</u> you want to
            begin another search. If you do wish to initiate
            another search, return to question 1 of this
            sequence.

6. Do you want to print one of the networks in which an equivalent node
is found?

    YES: Continue to question #7.

    NO: You have reached an endpoint in the sequence since
            you do not want to have a network printed.

7. Do you know the number under which the network is stored in the computer?

    YES: Continue to question #8.

    NO: Refer to the first seven characters of the node
            designated as equivalent. *These seven characters*
            are the network number. Continue to question #8.

8. Where do you want to print the network that you want to examine?

    AT THE TERMINAL THAT YOU ARE USING: Refer to Direction
    block J (located on page 31).

    AT THE HIGH-SPEED PRINTER IN ROOM B219 BLISS HALL:
    Refer to Direction Block K (located on page 32).

DIRECTION BLOCK J

(To Print a Network at the Terminal)

a. If you have already signed on and run a program, enter the command
SYSTEM. Then follow the sequence given in b. If you are beginning
the sequence anew, begin by signing on. The instructions for signing
on are located at the terminal.

b. The computer will ask a sequence of questions, to which you respond
as follows:

SYSTEM?	YFOR
OLD OR NEW?	OLD
OLD FILE?	/CACI/NET1
READY	
*	RUN=(CORE=31K,ULIB)LIBRARY/USERLIB,R

NON-FATAL ERROR * MISSING ROUTINE .FFBC

THE NET1 PROGRAM ALLOWS YOU TO PRINT

PORTIONS OF A SPECIFIED TREE.

OUTPUT AT TERMINAL?	YES
ENTER TREE	You enter the 7-character alphabetic-numeric sequence to identify the tree as listed in Appendix I. For example, M010101.
The computer repeats what you have told it. For example, M010101	
OK?	OK (or NO)

INPUT FINISHED NO. NODES-54

NODE/LEVEL: 1 1 1 5 7 11 14 14

ENTER INITIAL NODE	You enter the specific node number that you want to start with (as shown in Figure 2). For example, M0101011. Recall that each section of the network is numbered differently: 1=US/USSR; 2=US/PRC; 3=US/Japan; 4=US/West Europe; 5=US/Other Country.
ENTER OPTION	FOR

c. The computer will print the network section requested in the format
shown in Figure 5. It will then ask

LOOK AT GO TO'S	YES

d. The computer will print the equivalence cross-over to other networks
or to other sections of the same network. It then asks

ENTER INITIAL NODE	(1) If you want to print another part of the same network--e.g., US/PRC relations--that code number should be entered M0101012. Then, follow the instructions from the command FOR.
	(2) If you do not want to print any more of this network, hit the return key.
	RETURN
ENTER OPTION	STOP

e. You have now completed sequence #3--search for equivalent nodes and
print out the networks involved.

DIRECTION BLOCK B

(To Print a Network at the High Speed Printer)

a. If you have already signed on and run a program, enter the command
    SYSTEM. Then, follow the sequence given in b. If you are beginning
    the sequence anew, begin by signing on. The instructions for signing
    on are located at the terminal.

b. The computer will ask a sequence of questions, to which you respond
    as follows:

SYSTEM?	YFOR
OLD OR NEW?	OLD
OLD FILE?	/CACI/NET1
READY	
*	RUN=(CORE=31K,ULIB)LIBRARY/USERLIB,R

NON-FATAL ERROR * MISSING ROUTINE .FIBC

THE NET1 PROGRAM ALLOWS YOU TO PRINT

PORTIONS OF A SPECIFIED TREE.

OUTPUT AT TERMINAL?	NO
ENTER TREE	You enter the 7-character alphabetic-numeric sequence to identify the tree as listed in Appendix 1. For example, M010101.

The computer repeats what you
have told it. For example,
M010101.

OK?	OK (or NO)

INPUT FINISHED NO. NODES = 54

NODE/LEVEL: 1 1 1 5 7 11 14 14

ENTER INITIAL NODE	You enter the specific node number that you want to start with (as shown in Figure 2). For example M0101011. Recall that each section of the network is numbered differently: 1=US/USSR; 2=US/PRC; 3=US/Japan; 4=US/West Europe; 5=US/Other Country.
ENTER OPTION	FOR

c. The computer will print the network section requested in the format
    shown in Figure 5. It will then ask

LOOK AT GO TO'S	YES

d. The computer will print the equivalence cross-overs to other networks
    or to other sections of the same network. It then asks

ENTER INITIAL NODE	(1) If you want to print another part of the same network--e.g., US/PRC relations--that code number should be entered M0101012. Then, follow the instructions from the command FOR.
	(2) If you do not want to print any more of this network, hit the return key.
	RETURN
ENTER OPTION	STOP

e. The computer will print a number that will enable you to identify your
    output at the high-speed printer.

    SNUMB #9999T

f. Take the number that you receive to room B219 Bliss Hall and pick up
    your printout there. You have now completed sequence #3--searching
    for equivalent nodes and printing the networks with these nodes.

This section presents two program sequences for individuals who are familiar
with at least one of the 52 networks prepared for FORECAST 90. The level
of network familiarity required may be gained from either the execution of
the first three sequences presented in the previous section or through an
inspection of the file copies of the networks stored at the USAWC library.

One additional sequence presented here permits the user to print the net-
works backward from a point that he designates. A second sequence permits him
to print from a designated point to obtain the alternatives that were
rejected in reaching the specified point in the network. Figures 6 and 7
present the results obtained from a print-back or a print of the rejected
alternatives in a specific network. As Figure 6 shows, the print-back
procedure permits the user to construct an audit trail that reconstructs
how he reached a specified point in the network. Figure 7 shows that the
rejected-options print enables the user to obtain information on what
branches were not selected in reaching a particular point in the network.
Thus, the rejected-options procedure is particularly useful for charting
directions that could have been taken but were not. This option permits the
user to focus on the alternatives that he might have chosen rather than on
those that were chosen.

It is important to stress that these sequences should be undertaken only
after the user has some working familiarity with a specific network or
with the networks generally. Since specific information on the nodes from
which print-back or print of rejected options is required before these
options can be used, prior familiarity with the network is indispensible.

Figure 6. Nodes Printed in the Print Back Mode

Figure 7. Rejected Nodes

1. Do you want to print a network backward from a node that you have selected to obtain an audit trail of the process that led to the point selected in the network?

    YES: Continue to question #2.

    NO: You have reached an endpoint in this sequence.

2. Do you know the tree number that you want to use in the print-back?

    YES: Continue to question #3.

    NO: Refer to sequence #1 to view the networks, or
          to Appendix I where the catalytic events that are
          currently networked are listed.

3. Do you know the node number from which you want the print to begin?

    YES: Continue to question #4.

    NO: Familiarize yourself with the network that you want
          to use so that you can identify the node number that
          you want to use. If necessary, either (1) consult
          the file copy at the USAWC library or (2) run one of
          the earlier sequences to print the network out. Then,
          continue to question #4.

4. Where do you want to print the network that you want to examine?

    AT THE TERMINAL THAT YOU ARE USING: Refer to Direction
    Block L (located on page 36).

    AT THE HIGH-SPEED PRINTER IN ROOM B219 BLISS HALL:
    Refer to Direction Block M (located on page 37).

DIRECTION BLOCK I

(To Print a Network Back at the Terminal)

a. If you have already finished one section on a previous, enter the command system. Then follow the sequence given in b. If you are beginning the sequence anew, begin by signing on. The instructions for signing on are located at the terminal.

b. The computer will ask a sequence of questions, to which you respond as follows:

SYSTEM?	YFOR
OLD OR NEW?	OLD
OLD FILE?	/CACI/SET1
READY	
*	RUN=(CORE=31K,PLI1)LIBRARY/USERLIB,R
NON-FATAL ERROR * MISSING ROUTINE .IFDC	
THE NEXT PROGRAM ALLOWS YOU TO PRINT	
PORTIONS OF A SPECIFIED TREE.	
OUTPUT AT TERMINAL?	YES
ENTER TREE	You enter the 7-character alphabetic-numeric sequence to identify the tree as listed in Appendix 1. For example, M010101.
The computer repeats what you have told it. For example, . M010101	
OK?	OK (or NO)
INPUT FINISHED NO. NODES-54	
NODE/LEVEL: 1 1 1 5 7 11 14 14	
ENTER INITIAL NODE	You enter the specific node number that you want to start with (as shown in Figure 2). For example M0101011111.R001.
ENTER OPTION	BACK

c. The computer will print the network section requested in the format shown in Figure 5. It will then ask

LOOK AT GO TO'S	YES

d. The computer will print the equivalence cross-over to other networks or to other sections of the same network. It then asks

ENTER INITIAL NODE	(1) If you want to print another part of the same network--e.g., US/PRC relations--that code number should be entered M0101012. Then, follow the instructions from the command BACK.
	(2) If you do not want to print any more of this network, hit the return key.
	RETURN
ENTER OPTION	STOP

e. You have now completed sequence #4--printing a network backward to obtain an audit trail.

DIRECTION BLOCK M

(To Print a Network Back at the High Speed Printer)

a. If you have already signed on and run a program, enter the command
SYSTEM. Then follow the sequence given in b. If you are beginning
the sequence anew, begin by signing on. The instructions for signing
on are located at the terminal.

b. The computer will ask a sequence of questions, to which you respond
as follows:

SYSTEM?	YFOR
OLD OR NEW?	OLD
OLD FILE?	/CAC1/NFT1
READY	
*	RUN=(CORE=31K,PLIB)LIBRARY/USERLIB,R
NON-FATAL ERROR * MISSING ROUTINE .FFBC	
THE NFT1 PROGRAM ALLOWS YOU TO PRINT	
PORTIONS OF A SPECIFIED TREE.	
OUTPUT AT TERMINAL?	NO
ENTER TREE	You enter the 7-character alphabetic-numeric sequence to identify the tree as listed in Appendix I. For example, M010101.
The computer repeats what you have told it. For example, M010101	
OK?	OK (or NO)
INPUT FINISHED NO. NODES-54	
NODE/LEVEL: 1 1 1 5 7 11 14 14	
ENTER INITIAL NODE	You enter the specific node number that you want to start with (as shown in Figure 2). For example M0101011111.H001.
ENTER OPTION	BACK

c. The computer will print the network section requested in the format
shown in Figure 5. It will then ask

LOOK AT GO TO'S	YES

d. The computer will print the equivalence cross-over to other networks
or to other sections of the same network. It then asks

ENTER INITIAL NODE	(1) If you want to print another part of the same network--e.g., US/PRC relations--that code number should be entered M0101012. Then, follow the instructions from the command BACK.
	(2) If you do not want to print any more of this network, hit the return key.
	RETURN
ENTER OPTION	STOP

e. The computer will print out a number that will enable you to identify
your output at the high-speed printer.

SNUMB #9999T

f. Take this number to room B219 Bliss Hall and pick up your printout
there. You have now completed sequence #4--printing a network back-
ward to obtain an audit trail.

SEQUENCE #5: TO PRINT A NETWORK FROM A DESIGNATED NODE TO OBTAIN THE REJECTED OPTIONS

1. Do you want to print a network from a node that you have selected so that you can obtain information on branches at each node that were not taken in the path that you have chosen?

    YES: Continue to question #2.

    NO: You have reached an endpoint in this sequence.

2. Do you know the tree number that you want to use in the print-back?

    YES: Continue to question #3.

    NO: Refer to sequence #1 to view the networks, or to Appendix I where the catalytic events that are currently networked are listed.

3. Do you know the node number from which you want the print to begin?

    YES: Continue to question #4.

    NO: Familiarize yourself with the network that you want to use so that you can identify the node number that you want to use. If necessary either (1) consult the file copy at the USAWC library or (2) run one of the earlier sequences to print the network out. Then, continue to question #4.

4. Where do you want to print the network that you want to examine?

    AT THE TERMINAL THAT YOU ARE USING: Refer to Direction Block N (located on page 39).

    AT THE HIGH-SPEED PRINTER IN ROOM B219 BLISS HALL: Refer to Direction Block O (located on page 40).

a. If you have already signed on and run a program, enter the command
SYSTEM. Then follow the sequence given in b. If you are beginning
the sequence anew, begin by signing on. The instructions for signing
on are located at the terminal.

b. The computer will ask a sequence of questions, to which you respond
as follows:

SYSTEM?	YFOR
OLD OR NEW?	OLD
OLD FILE?	/CACI/NET1
READY	
*	RUN=(CORE=31K,UL1b)LIBRARY/USERLIB,R
NON-FATAL ERROR * MISSING ROUTINE .FFBC	
THE NET1 PROGRAM ALLOWS YOU TO PRINT	
PORTIONS OF A SPECIFIED TREE.	
OUTPUT AT TERMINAL?	YES
ENTER TREE	You enter the 7-character alphabetic-numeric sequence to identify the tree as listed in Appendix I. For example, M010101.
The computer repeats what you have told it. For example, M010101	
OK?	OK (or NO)
INPUT FINISHED NO. NODES=54	
NODE/LEVEL: 1 1 1 5 7 11 14 14	
ENTER INITIAL NODE	You enter the specific node number that you want to start with (as shown in Figure 2). For example M0101011111.H001.
ENTER OPTION	REJ

c. The computer will print the network section requested in the format
shown in Figure 5. It will then ask

LOOK AT GO TO'S	YES

d. The computer will print the equivalence cross-over to other networks
or to other sections of the same network. It then asks

ENTER INITIAL NODE:	(1) If you want to print another part of the same network--e.g., US/PRC relations--that code number should be entered M0101012. Then, follow the instructions from the command BACK.
	(2) If you do not want to print any more of this network, hit the return key.
	RETURN
ENTER OPTION	STOP

e. You have now completed sequence #5--printing the alternatives not
chosen in reaching a particular point in the network.

DIRECTION BLOCK O

(To Print the Rejected Options at the High-Speed Printer)

a. If you have already signed on and run a program, enter the command SYSTEM. Then follow the sequence given in b. If you are beginning the sequence anew, begin by signing on. The instructions for signing on are located at the terminal.

b. The computer will ask a sequence of questions, to which you respond as follows:

SYSTEM?	YFOR
OLD OR NEW?	OLD
OLD FILE?	/CACI/NET1
READY	
*	RUN=(CORE-31K,ULIB)LIBRARY/USERLIB,R
NON-FATAL ERROR * MISSING ROUTINE .FFBC	
THE NET1 PROGRAM ALLOWS YOU TO PRINT	
PORTIONS OF A SPECIFIED TREE.	
OUTPUT AT TERMINAL?	NO
ENTER TREE	You enter the 7-character alphabetic-numeric sequence to identify the tree as listed in Appendix I. For example, M010101.
The computer repeats what you have told it. For example, M010101	
OK?	OK (or NO)
INPUT FINISHED NO. NODES-54	
NODE/LEVEL: 1 1 1 5 7 11 14 14	
ENTER INITIAL NODE	You enter the specific node number that you want to start with (as shown in Figure 2). For example M0101011111.H001.
ENTER OPTION	REJ

c. The computer will print the network section requested in the format shown in Figure 5. It will then ask

LOOK AT GO TO'S	YES

d. The computer will print the equivalence cross-over to other networks or to other sections of the same network. It then asks

ENTER INITIAL NODE	(1) If you want to print another part of the same network--e.g., US/PRC relations--that code number should be entered M0101012. Then, follow the instructions from the command BACK.
	(2) If you do not want to print any more of this network, hit the return key.
	RETURN
ENTER OPTION	STOP

e. The computer will print a number that will enable you to identify your output at the high-speed printer.

SNUMB #99997

f. Take this number to room B219 Bliss Hall and pick up your printout there. You have now completed sequence #5--printing the alternatives not chosen in reaching a particular point in the network.

This section of the manual is written for individuals who are familiar
with both the FORECAST 90 networks and interactive computer programs.
It details a number of characteristics of the FORECAST 90 computer pro-
grams that have not been covered in the previous discussions. Most
importantly, the flexibility of the FORECAST 90 programs and their ability
to operate in more varied ways than those presented so far are stressed.

Table 4 presents a summary of the various functions and requirements for
the four FORECAST 90 programs. Three of the programs are interactive;
the fourth program is written for batch mode processing. Three data files--
detailed in the "Programmer's Manual for the FORECAST 90 Computer Programs"
--are required to operate the entire system, although each of the four
programs uses a single data file.

NET1: A NETWORK SUMMARY PROGRAM

The NET1 program is available to print all or parts of specific trees.
Information for each of the 52 networks is organized by node in a separate
file for each. All data for a single node are stored on consecutive lines
in the file. The following information is retained in the file for each
node:

- Node designation - a set of alpha-numeric characters
  (up to 16) that identify both the tree and the node
  within the tree.

- Node level - the location in the network for a specific
  node.

- Number of branches at the node.

- Lines of text - each line is limited to 32 characters,
  but there is no limit to the number of lines per node
  (subject to the general limitation of 1500 lines for
  the entire tree).

- "GO TO" lines - pointers to related nodes.

TABLE 4

Summary of FORECAST 90 Programs

Program Name	Type	Objectives	Input File	Function
NET1	Interactive	Search a data file for the structure of a single network.	Network Files. Each file contains node designations and text for all nodes in a single network. There are 52 files with between 54-423 nodes per network.	To print portions of a single network selected by the user.
NET2	Batch	Search a data file for all nodes with an equivalent structure.	Node Information File. Each file record provides summary information on the structure of action in each node in each network. There are presently 5000 records in the file.	To identify and print for each node of each network all nodes in that network and in other networks that have the same action structure.
NET3	Interactive	Search a data file for all nodes with a structure that is equivalent to the one specified by the user.	Node Information File.	To identify and print information on the location of equivalence structure specified by the user as found in any of the 52 networks.
NET4	Interactive	Summarize the status of all networks presently stored in the system.	Tree Summary File. Information is included for each network on the substance of the net, the date of the net, the date of completion, last date of revision, and number of nodes in the network.	To print information on the content and status of the networks selected through criteria specified by the user.

To execute the NET1 program, the user must supply the network number[3] (a seven-digit alpha-numeric sequence unique to each network) and the initial node designation (to mark the point in the network from which the program is to start). Once the network and the initial node designation have been selected, the program can carry out any one of the following operations:

- Print forward   To print all higher level nodes (and the accompanying text) directly connected to the initial node selected.

- Print back   To print all lower level nodes (and the accompanying text) directly connected to the initial node.

- Print rejected nodes   To print all lower level nodes (and the accompanying text) not directly connected to the initial node, but in the same main branch.

Depending on which of the operations is desired, the user merely enters one of the available commands. The commands available under NET1 are:

FOR - to print forward

BACK - to print back

REJ - to print rejected nodes

HELP - to print this list of options

STOP - to terminate program execution

NET2: A BATCH MODE EQUIVALENCE SEARCH PROGRAM

NET2 is a batch program that identifies and prints equivalent nodes across the entire set of trees. It operates on the Node Information File—NIF— which is also the input file for NET3. Since the input and output are both processed in batch mode, the standard batch mode access procedure for the USAWC computer should be used.

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[3] The networks are stored in files under the number of the catalytic event on which the tree is based. These numbers are given in Appendix I.

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NET2 searches for equivalent nodes, where equivalent nodes are defined
as those for which the actors, targets, regions, and substantive topics
are the same. The program sifts through the NIF, identifying nodes with
an equivalent structure that might occur in any of the 52 networks, and
prints the list of equivalent nodes for each member of the equivalence
pair. The output is then organized by the major network category--
E (economic), M (military), P (political), S (socio-psychological), and
T (technological).

The program was designed for batch operations for three reasons:

- It prints all of the equivalent groups in the NIF;
  no user options are permitted.

- For more efficient processing, the entire NIF is
  read into core. This requires more core storage
  than is allowed to interactive programs by the
  USAWC computer system.

- Since all members of a group are printed for each
  group member, the large volume of output is effi-
  ciently handled only by a high-speed printer.

Because it is expected that this program will be·run infrequently, it is
not stored on line. The card deck is held by the AWC ADP Support Group.
Users who wish to run the program may consult the ADP Support Group for
assistance with the required system control cards.

NET3: AN INTERACTIVE EQUIVALENCE SEARCH PROGRAM

NET3 allows the user to print information from the Node Information
File about actions contained in selected nodes. He may retrieve and
print nodes by any or all of the following node descriptors: actor code,
action code, target code, geographic region code, and substantive topic
code.[4]

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[4] In the present program only parts of a larger data file are read. Thus,
the actual data file contains information on two actors, two targets, and
a three-digit code for action and substantive topic. Only one actor, one
target, and two digits of the action and substantive topic codes are cur-
rently used in the search.

The variables are considered in turn and the user is given a chance to enter a specific code, or he may elect not to select on this variable by entering the world "ALL." If the user elects the HELP option, the available options and the specific code to be input will be printed for him. A user thoroughly familiar with the program may elect not to have HELP; in this case, he must remember the order in which the variables are considered by the program. However, if he gets confused at any point, he may enter the word "HELP" to have the names of the variables printed. The word "OUT" will terminate this option.

NET3 performs only one function; that is, it prints file entries selected by the user. Therefore the only information to be supplied by the user is the specific codes for the variables he wishes to enter. The program presents the variables to him in the following order: actor, action, target, region, and substantive area. In each case, the program expects the user to enter a specific code for the variable or the word "ALL" to indicate that all values of this variable are acceptable (that is, he does not wish to select on this variable).

For faster program execution, the user may refuse the initial offer of "HELP" or he may terminate the HELP option at any stage by entering the word "OUT." The names of the variables will then not be printed. Should the user forget the order in which the variables are considered, he may at any time enter the word "HELP" to reactivate the HELP option.

NET4: A NETWORK SUMMARY PROGRAM

NET4 allows the user to retrieve, print, and modify information in the Tree Summary File. This file contains the following information for each of the decision trees in the system:

- Tree number
- Author of the tree
- Date of tree creation

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- Date of last tree modification

- Total number of nodes in the tree

- Actor code

- Substantive topic code

- Region code

- One line of text describing the subject matter

The program is designed to be self-prompting. In response to the first program request, "ENTER OPTION," the user may enter an option from the list below or he may enter the word "HELP" and have the list of options printed at the terminal. Major command options are:

Command	Function
ALL	To print the entire file.
ADD	To add new lines (to a stored disk file).
MOD	To replace the date of last modification of a selected tree.
DIS	To print selected file entries. (Selection options are listed below).
HELP	To print instructions for the user.
END	To allow the user to terminate the current option.
STOP	To terminate program execution.
	Both END and STOP will allow the user to save a modified file.

If the user elects the DIS option, he must enter selection option(s) and specific code(s). The selected options are:

Selection Option	Function
TREE	To print the file entry for a selected tree.
AUTH	To print all file entries for a selected author.

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DFC   To print all file entries for trees created after
                        a given date.

DFM   To print all file entries for tree modified after
                        a given date.

ACT   To print all file entries for a selected actor.

SUB   To print all file entries for trees with a selected
                        substantive area.

REG   To print all file entries for trees with a selected
                        region.

NO   To end the input of selection criteria.

While the program does not provide for file modification (ADD to add lines

and MOD to change dates), it recommended that all file changes be made

with the AWC computer system's EDIT system.[5]

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[5] Information on the EDIT system can be obtained from the AWC ADP Support
Group.

ECONOMIC NETWORK (E)

CATALYTIC EVENTS

Number	Subject Matter
E010101	Oil embargo. Western developed nations and Japan deprived of oil from Middle East.
E010102	A 25 percent shortfall in North American grain and soybean crops leads to U.S. embargo on grain and soybean exports.
E010103	The EEC, seeking increased military and economic independence from superpower politics, announces it intends to integrate its defense forces at a future date and concludes a series of extensive trade agreements with selected LDC's rich in raw materials in exchange for broad trade credits, arms sales, military assistance, and the transfer of technology.
E010104	Cartelization of copper exports. Copper-producing countries of Africa, Latin America, and Asia formulate a policy to increase (and maintain) the price of copper at a level 100 percent greater than the existing level.
E010201	Japanese and Russian economic cooperation. Trade pact establishes extensive involvements of the Japanese in developing Soviet energy and other resources and technological cooperation in the electronic and transportation fields.
E010301	European economic integration. Perceived material benefits from economic integration lead to efforts to remove artificial (government) barriers to economies in Europe.

Number	Subject Matter
E010302	Severe economic recession in the United States.
E010401	LDC's pressure developed countries for a new aid system. LDC preference is for multilateral aid but demand untied aid.
E010501	EEC breaks down as strains on resource availability exacerbate political disputes arising from economic nationalism.

MILITARY NETWORK (M)

CATALYTIC EVENTS

Number	Subject Matter
M010101	The Soviet Union embarks on a program to achieve strategic nuclear superiority (including a first-strike capability) over the United States.
M010201	MBFR negotiations are unsuccessful, and the U.S. Congress mandates a reduction of U.S. forces in Europe to 50,000.
M010301	The United States loses all bases and air transit rights in Southern Europe and the Mideast.
M010302	As a result of increasing leftist group activities in Japan, the United States loses air and naval bases and air transit rights in Japan and Okinawa.
M010303	The United States loses air and naval bases and air transit rights in Thailand, the Philippines, and Taiwan as these countries become more pro-Chinese.
M010304	Marked increase in naval capability is achieved by the United States in developing surface-effects ships for deployment and support of U.S. forces overseas.
M010305	Development of improved "over-the-bench" and "ship-to-shore" logistics capabilities progresses to the point that U.S. bases can be rapidly established and maintained almost anywhere in the world.
M010306	Strategic airlift capability is enhanced through the development of nuclear-powered airships.

Number	Subject Matter
MO10307	A U.S. Congressional mandate results in withdrawal of all U.S. forces in South Korea.
MO10401	The Soviet Union, due to requirements on the economy placed by internal factors, significantly reduces its national defense budget and its military manpower.
MO10402	The EEC, seeking increased military and economic independence from superpower politics, announces it intends to integrate its defense forces at a future date and concludes a series of extensive trade agreements with selected LDC's rich in raw materials. These agreements involve guarantees of continuing supplies of raw materials in exchange for broad trade credits, arms sales, military assistance, and the transfer of technology.
MO10403	Reduced credibility of the utility of military force, pressures for application of U.S. financial resources to social programs, worldwide depression and/or other factors force marked reduction in the national defense budget.
MO10404	Solid evidence is received of a marked increase in the application of Soviet and PRC resources to develop increased military capabilities.
MO10501	Arms sales competition results in entry of other nations capable of producing armaments (for example, Sweden) into programs with developing nations.
MO10502	Nations now receiving military aid/sales from the United States cancel programs and turn to the Soviet Union or the People's Republic of China.

Number	Subject Matter
M010601	The People's Republic of China develops strategic delivery capabilities including land and sea-based missiles in significant quantities.
M010602	The countries of Western Europe coalesce politically to the point of integrating defense policies. The French and British nuclear deterrents are merged, and the combined EEC financial resources are put behind a major strategic and tactical nuclear weapons expansion program.

POLITICAL NETWORK (P)

CATALYTIC EVENTS

Number

Subject Matter

P010101   The United States adopts a policy of independence from foreign sources for critical materials. Extensive mining of the seabeds is planned.

P010102   U.S. imposes a grain embargo.

P010201   A coalition government that includes Communist participation takes power in Italy. The Italian Communist Party ascends to power in an Italian coalition government. Italy takes a non-aligned position in world politics; it loosens ties with NATO by a defensive alliance with minimal military cooperation before a war breaks out, and requests that all NATO and non-Italian troops, ships, armaments, weapons, planes, and material be removed from Italian territory. The new Italian Government declares that in foreign policy it will not align with any power but will pursue purely Italian interests.

P010301   The U.S. Secretary of State is assassinated by a member of a Soviet-sponsored terrorist group.

P010302   Soviet leadership changes increase the importance of ideology.

P010303   The U.S. leadership changes and a president is elected who insists on Soviet domestic changes as a precondition to U.S. cooperation.

Number	Subject Matter
PO10401	A war breaks out in the Middle East. Israel attacks Syria. The attack is either preemptive or a response to Syrian antagonism. Egypt initially mobilizes but gives Syria only diplomatic and verbal support. Arab oil-producing nations cut off shipments of oil to states not supporting Syria. Non-Arab oil states take advantage of the situation by raising prices. The West is, therefore, faced with decreased supplies at higher prices. The United States and the Soviet Union concentrate ships in the Indian Ocean.
PO10501	Iranian-Iraqi war. Iranian armed forces cross over into Iraqi Kurdistan to save the Pesh Merga (Kurdish guerrillas) from defeat. Iraq accuses the United States, Iran, and Israel of having invaded it and asks for Soviet and Arab support.
PO10601	By maximizing the effectiveness of its superior missile throw-weight through MIRV warheads and by attaining an effective ASW capability, the Soviet Union develops a first-strike capability against the United States.
PO10701	Activation of Sinkiang secessionist movement with Soviet assistance.
PO10801	Japan decides to expand its armaments, acquire nuclear capacity, and enter the lucrative arms export market.
PO10802	Argentina develops nuclear capability to counterbalance increasing Brazilian dominance of the continent.
PO10901	The EEC, seeking increased military and economic independence from superpower politics, announces it intends to integrate its defense forces at a future date and concludes a series of extensive trade agreements with selected LDC's rich in raw materials. These agreements involve guarantees of continuing supplies of raw materials in exchange for broad trade credits, arms sales, military assistance, and the transfer of technology.

SOCIO-PSYCHOLOGICAL NETWORKS (S)

CATALYTIC EVENTS

Subject Matter

Number

S010101
Militant Third World nations successfully dominate the United Nations, destroying U.S. ability to influence policy in the organization.

S010401
The Soviet Union removes restrictions on the movement of people across the Iron Curtain.

S010501
There is a disastrous famine in India. Starvation intensifies concern over food resource availability throughout the world.

S010502
The EEC, seeking increased military and economic independence from superpower politics, announces it intends to integrate its defense forces at a future date and concludes a series of extensive trade agreements with selected LDC's rich in raw materials. These agreements involve guarantees of continuing supplies of raw materials in exchange for broad trade credits, arms sales, military assistance, and the transfer of technology.

S010601
A race war occurs in Africa between Black Africans and white Africans and Rhodesians.

S010701
Italy installs a coalition government including Communist participation. Balance of power in the Italian cabinet shifts to the left as the Communist/Socialist bloc controls the majority of votes.

TECHNOLOGICAL NETWORKS (T)

CATALYTIC EVENTS

Subject Matter

Number	Subject Matter
T010101	Europe, Japan, and the United States experience a period of continued rising inflation, forcing the cost of research to unprecedented heights.
T010201	The EEC, seeking increased military and economic independence from superpower politics, announces it intends to integrate its defense forces at a future date and concludes a series of extensive trade agreements with LDC's rich in raw materials. These agreements involve guarantees of continuing supplies of raw materials in exchange for broad credits, arms sales, military assistance, and the transfer of technology.
T010202	A commercial nuclear power plant in Europe explodes, killing several hundred immediately and exposing more to varying amounts of radiation.
T010203	A 'killer' thermal inversion over Japan's industrial region kills thousands in the area.
T010501	The United States develops a fusion technology providing the relatively cheap generation of electricity but considers dissemination of the technology a political decision.
T010601	A direct broadcast satellite technology advances to the state where such a satellite could be launched.
T010602	The United States develops the capability to affect regional weather predictably.

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E010101   CACI 752307 752707 101 691 14 05
E010101   OIL EMBARGO AGAINST WESTERN STATES BY MIDDLE EASTERN COUNTRIES.
E010102   CACI 752307 752707 133 002 14 01
F010102   US GRAIN EMBARGO.
E010103   CACI 752307 752707 154 397 14 03
E010103   EEC ATTEMPTS TO BECOME RESOURCE INDEPENDENT BY TRADE PACTS WITH LDCs.
E010104   CACI 752307 752707 84 596 14 05
E010104   CARTELIZATION OF COPPER.
E010201   CACI 752307 752707 113 740 14 07
E010201   JAPAN-USSR TRADE/AID PACTS TO DEVELOP SOVIET ENERGY SOURCES.
E010301   CACI 752307 752707 170 397 14 03
E010301   EUROPEAN ECONOMIC INTEGRATION.
E010302   CACI 752307 752707 99 002 02 01
E010302   SEVERE ECONOMIC RECESSION OCCURS IN THE US.
E010401   CACI 752307 752707 133 997 12 00
E010401   LDC'S PRESSURE DEVELOPED COUNTRIES FOR NEW AID SYSTEM.
E010501   CACI 752307 752707 101 397 14 03
E010501   EEC BREAKS DOWN FROM STRAINS OVER RESOURCE AVAILABILITY.
M010101   CACI 752307 752707 70 365 17 04
M010101   USSR EXPANDS STRATEGIC WEAPONS, SEEKS FIRST STRIKE CAPABILITY.
M010201   CACI 752307 752707 137 002 07 03
M010201   MBFR UNSUCCESSFUL.  CONGRESS MANDATES 50,000 TROOP WITHDRAWAL.
M010301   CACI 752307 752707 54 002 07 00
M010301   US LOSES BASE/TRANSIT RIGHTS IN SOUTHERN EUROPE AND MIDDLE EAST.
M010302   CACI 752307 752707 172 002 07 07
M010302   US LOSES BASE/TRANSIT RIGHTS IN JAPAN AND OKINAWA.
M010303   CACI 752307 752707 170 002 07 07
M010303   US LOSES BASE/TRANSIT RIGHTS IN THAILAND, TAIWAN, AND PHILIPPINES.
M010304   CACI 752307 752707 102 002 17 21
M010304   US NAVAL CAPABILITY INCREASED WITH SURFACE EFFECT SHIPS.
M010305   CACI 752307 752707 99 002 17 01
M010305   IMPROVED LOGISTICAL CAPABILITIES PERMIT RAPID US BASING ALMOST ANYWHERE
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M0123326  CACI 750327 750707 123 002 17 01    DEVELOPMENT OF NUCLEAR POWERED AIRSHIPS BY US.
M0123306                                        US FORCES WITHDRAW FROM SOUTH KOREA BY CONGRESSIONAL MANDATE.
M0123327  CACI 752327 750707  83 002 07 07
M0123307  CACI 750307 750707 156 365 17 04     USSR SIGNIFICANTLY DECREASES DEFENSE BUDGET.
M0123421  CACI 750307 750707 134 397 14 03     EEC ATTEMPTS TO BECOME RESOURCE INDEPENDENT BY TRADE PACTS WITH LDCS.
M0123421
M0123422
M0123402

M0124403  CACI 752307 750707 170 002 17 01     MARKED REDUCTION IN US DEFENSE BUDGET.
M0124403  CACI 752307 750707 167 365 17 00     USSR-PRC INCREASE RESOURCES DEVOTED TO MILITARY PROGRAMS.
M0124424  CACI 750307 750707 169 995 16 00     ARMS SALES COMPETITION INCREASES NUMBER OF ARMS SELLING COUNTRIES.
M0124424  CACI 752307 750707 115 995 16 00     COUNTRIES CANCEL US MIL. AID PROGRAMS, TURN TO USSR-PRC INSTEAD.
M0125521  CACI 752307 752707 142 710 17 07     PRC DEVELOPS ICBM-SSBM CAPABILITY AND SIGNIFICANT MISSILE QUANTITIES.
M0125522  CACI 750327 750707 125 397 17 03     EEC COUNTRIES INTEGRATE DEFENSE POLICIES, EXPAND STRATEGIC WEAPONS.
M0125542  CACI 750307 750707 238 002 14 01     US ADOPTS CRITICAL MATERIALS INDEPENDENCE POLICY. PLANS SEABED MINING.
M0126601  CACI 750307 752707 233 002 14 01     US GRAIN EMBARGO.
M0126501
M0126602
M0126622  CACI 750307 750707 121 325 04 03     COMMUNIST PARTY PARTICIPATES IN ITALIAN GOVERNMENT COALITION.
P0126101  CACI 750307 750707 129 365 23 01     US SECRETARY OF STATE ASSASSINATED BY SOVIET-SPONSORED TERRORIST GROUP
P0126101  CACI 750307 750707 142 365 04 24     USSR LEADERSHIP CHANGES INCREASE THE IMPORTANCE OF IDEOLOGY.
P0126122  CACI 750307 750707 117 002 04 21     US LEADERSHIP CHANGE. PRESIDENT INSISTS ON DOMESTIC CHANGES IN USSR.
P0126102
P0126201  CACI 752307 750707 423 666 11 05     WAR IN MIDDLE EAST. ISRAEL ATTACKS SYRIA. OAPEC EMBARGOES OIL.
P0126221  CACI 750307 750707 113 636 11 05     IRANIAN-IRAQI WAR. IRANIANS CROSS INTO IRAQ TO SAVE KURDS FROM DEFEAT.
P0126301
P0126321
P0126302
P0126302
P0126303
P0126323
P0126401
P0126471
P0126541
P0126521
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P213601   CACI 750307 750707  75 365 17 24
P213601   USSR DEVELOPS FIRST STRIKE CAPABILITY AGAINST US.
P010701   CACI 750307 750707 222 365 03 07
P010701   SINKIANG SECESSIONIST MOVEMENT ACTIVATED WITH SOVIET ASSISTANCE.
P012601   CACI 750307 750707 105 710 17 07
P013601   JAPAN EXPANDS ITS ARMAMENTS, GOES NUCLEAR, AND ENTERS THE ARMS TRADE.
P013602   CACI 750307 750707 129 160 17 22
P012302   ARGENTINA DEVELOPS A NUCLEAR CAPABILITY.
P013601   CACI 750307 750707 231 397 14 03
P012901   EEC ATTEMPTS TO BECOME RESOURCE INDEPENDENT BY TRADE PACTS WITH LDCS.
S013101   CACI 750307 750707  96 989 10 01
S012101   MILITANT LDCS DOMINATE UN, DESTROY US ABILITY TO INFLUENCE ACTIVITIES.
S012401   CACI 750307 750707 147 365 08 04
S012401   USSR REMOVES RESTRICTIONS ON POPULATION EMIGRATION.
S012501   CACI 750307 750707 129 750 08 06
S013501   DISASTEROUS FAMINE IN INDIA.
S013502   CACI 750307 750707 142 397 14 03
S013502   EEC ATTEMPTS TO BECOME RESOURCE INDEPENDENT BY TRADE PACTS WITH LDCS.
S013601   CACI 750307 750707 222 560 23 06
S012701   RACE WAR IN SOUTH AFRICA AND RHODESIA.
S012701   CACI 750307 750707  98 325 04 03
T012101   COMMUNIST PARTY PARTICIPATION IN ITALIAN GOVERNMENT COALITION.
T012101   CACI 750307 750707 152 995 18 23
T012201   R AND D COSTS SUBSTANTIALLY INCREASED BY INFLATION.
T012201   CACI 750307 750707 173 397 14 03
T012202   EEC ATTEMPTS TO BECOME RESOURCE INDEPENDENT BY TRADE PACTS WITH LDCS.
T012202   CACI 750307 750707 115 397 05 03
T012203   COMMERCIAL NUCLEAR POWER PLANT EXPLODES IN EUROPE, RADIATION SPREADS.
T012203   CACI 750307 750707 130 740 08 07
T013501   A "KILLER" THERMAL INVERSION OCCURS OVER JAPAN'S INDUSTRIAL REGION.
T013501   CACI 750307 750707 149 402 13 01
T013601   US DEVELOPS FUSION TECHNOLOGY FOR CHEAP ELECTRICAL GENERATION.
T013621   CACI 750307 750707 132 995 18 00
T013622   DIRECT BROADCAST SATELLITE TECHNOLOGY ADVANCES TO FEASIBLE LEVELS.
T013622   CACI 750307 750707 104 402 18 01
          US DEVELOPS CAPABILITY TO AFFECT REGIONAL WEATHER PREDICTABILITY.
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ALPHABETICAL LISTING OF COUNTRIES AS ACTORS/TARGETS

Number	Country or Group
700	Afghanistan
161	Africa
405	African LDC's
339	Albania
615	Algeria
998	All Countries Other Than Superpowers
232	Andorra
589	Arab States
160	Argentina
161	Argentina & Peru
173	Arms-Exporting Nations
704	Asia
702	South Asia
704	Southeast Asia
899	ASEAN (Association of Southeast Asian Nations)
898	Asian LDC's (Asian People's Development Program)
900	Australia
305	Austria
400	Azores
771	Bangladesh
053	Barbados
211	Belgium
145	Bolivia
146	Bolivia and Peru
140	Brazil
141	Brazil and Chile
355	Bulgaria
775	Burma
516	Burundi

Number	Country or Group
811	Cambodia
471	Cameroun
020	Canada
699	CENTO
482	Central African Republic
483	Chad
155	Chile
710	China, People's Republic (PRC)
890	PRC and LDC's
891	PRC and N. Korea
892	PRC and Japan
893	PRC and People's Revolutionary Governments
713	China, Republic of
596	CIPEC (Intergovernmental Council of Copper Exporting Countries)
595	CIPEC and OPEC
100	Columbia
373	COMECON
383	Communist Parties
484	Congo
180	Copper Producers (All)
181	Copper Importers
094	Costa Rica
040	Cuba
352	Cyprus
315	Czechoslovakia
434	Dahomey
390	Denmark
994	Developed Countries (DC's)
042	Dominican Republic
130	Ecuador
398	EFTA (European Free Trade Area)
092	El Salvador

Number	Country or Group
530	Ethiopia
306	Europe, Eastern
397	EEC (European Economic Community)
215	Europe, Southern
397	Europe, Western
405	EEC, Northern Tier
406	EEC, Southern Tier
375	Finland
392	FAO (Food and Agriculture Organization)
175	Fertilizer Producers
177	Food Producers
986	Food Receivers/Imports
220	France
481	Gabon
420	Gambia
265	Germany, East
255	Germany, West
452	Ghana
350	Greece
090	Guatemala
458	Guinea
110	Guyana
041	Haiti
091	Honduras
310	Hungary
720	Hong Kong
362	IAEA (International Atomic Energy Agency)
395	Iceland
750	India
850	Indonesia
391	International Monetary Fund (IMF)
630	Iran

Number	Country or Group
631	Iran and Iraq
645	Iraq
205	Ireland
666	Israel
325	Italy
437	Ivory Coast
051	Jamaica
740	Japan
742	Japan and LDC's
743	Japan and Western Europe
663	Jordan
753	Kashmir
501	Kenya
731	Korea, North
732	Korea, South
690	Kuwait
812	Laos
099	Latin America
660	Lebanon
570	Lesotho
997	Less Developed Countries (LDC's)
989	LDC's, Anti- or Non-Communist
697	LDC's and OPEC
695	LDC's and Arab States
161	LDC's African
898	LDC's, Asian (Asian People's Development Program)
996	LDC's, Rich/Resource Rich
450	Liberia
620	Libya
621	Libya and South Yemen
223	Liechtenstein
212	Luxembourg

Number	Country or Group
721	Macao
999	Major Actors (US, USSR, PRC, Japan, W. Europe)
580	Malagasy
553	Malawi
820	Malaysia
852	Malaysia and Indonesia
782	Maldive
432	Mali
338	Malta
178	MNC's (Multinational Corporation)
590	Mauritius
435	Mauritania
172	Mercantile Countries
070	Mexico
610	Middle East
597	Middle East and North Africa
394	Migrants/Immigrants
989	Militant Third World
396	NATO
130	Non-Mercantile Countries
698	Oman
790	Nepal
210	Netherlands
989	New Majority at UN/Militant Third World
920	New Zealand
093	Nicaragua
436	Niger
475	Nigeria
185	Non-Arab Oil Producers
385	Norway
691	OAPEC (Organization of Arab Petroleum Exporting Countries)
199	OAS (Organization of American States)

Number	Country or Group
599	OAU (Organization for African Unity)
191	OECD
179	Oil Importers/Receivers
693	OPEC (Organization of Petroleum-Exporting Countries)
993	Other Cartels
909	Pacific Region
770	Pakistan
095	Panama
150	Paraguay
703	Persian Gulf States
135	Peru
840	Philippines
664	PLO (Palestine Liberation Org'n.)/Arab Guerrillas
290	Poland
235	Portugal
889	PRG's (People's Revolutionary Governments)
176	Raw Material Producers
174	Resource Importers
996	Resource Rich LDC's/Rich LDC's
889	Revolutionary Movements
552	Rhodesia
360	Rumania
517	Rwanda
670	Saudi Arabia
388	Scandanavia (Including Iceland)
992	SEATO
433	Senegal
451	Sierra Leone
830	Singapore
888	Sinkiang Secessionists
382	Socialist States
520	Somalia

Number	Country or Group
001	Some Nations/Selected Nations
560	South Africa
555	South Africa and Rhodesia
230	Spain
780	Sri Lanka
625	Sudan
572	Swaziland
380	Sweden
225	Switzerland
652	Syria
653	Syria and PLO
510	Tanzania
509	Tanzania and Zambia
800	Thailand
709	Tibet
461	Togo
052	Trinidad-Tobago
616	Tunisia
650	Turkey
500	Uganda
995	Undifferentiated Actor/Target
399	United Nations
365	Union of Soviet Socialist Republics
371	USSR & Japan & W. Europe
372	USSR & W. Europe
374	USSR & PRC
376	USSR & Japan
377	USSR & Arab Countries
379	USSR & LDC's
696	United Arab Emirates (UAE)
651	United Arab Republic (Egypt)
200	United Kingdom

Number	Country or Group
002	United States
190	US & USSR & W. Europe
191	US & Japan & W. Europe (OECD)
189	US & USSR & Oil Rich States
188	US & W. Europe & LDC's
192	US & USSR
193	US & PRC
194	US & Japan
195	US & W. Europe
199	US & OAS (Lat. Am.)
196	US & LDC's
439	Upper Volta
165	Uganda
101	Venezuela
102	Venezuela and Argentina
103	Venezuela and Peru
816	Vietnam, North
817	Vietnam, South
386	W. Europe and LDC's
387	W. Europe Except Italy (N.W. Europe)
389	W. Europe and OPEC
393	WHO (World Health Organization)
394	WTO (Warsaw Treaty Organization)
678	Yemen
681	Yemen, South
345	Yugoslavia
490	Zaire
491	Zaire and Mozambique
551	Zambia

ACTION TYPE CODES

General Category	Specific Breakdown

General Category   **Specific Breakdown**

01   Accomplish

- 010   Achieve
- 011   Succeed
- 012   Solve
- 013   Resolve
- 014   Decide
- 015   Satisfy
- 016   Dominate
- 017   Control
- 018   Stabilize
- 019   Conclude

02   Accuse

- 020   Accuse
- 021   Denounce
- 022   Criticize/Decry
- 023   Warn
- 024   Threaten
- 025   Condemn
- 026   Resent

03   Acquire

- 030   Acquire
- 031   Produce
- 032   Buy/Procure
- 033   Take
- 034   [word omitted]
- 035   Receive
- 036   Invest
- 037   Overbid
- 038   Outbid

04   Aggravate Relationships

- 040   Aggravate
- 041   Expel
- 042   Revoke
- 043   Seize
- 044   Confine
- 045   Restrict
- 046   Purge
- 047   Irritate
- 048   Subvert

05   Agree

- 050   Agree
- 051   Accept
- 052   Accede
- 053   Allow
- 054   Permit
- 055   Encourage
- 056   Cooperate
- 057   Concur
- 058   Welcome

06	Approve	060	Approve
		061	Adopt
		062	Sponsor
		063	Promise
		064	Assure
		065	Reward
		066	Praise
		067	Recognize
		068	Assist
07	Change	070	Change
		071	Exchange
		072	Alter
		073	Develop
		074	Merge
		075	Join
		076	Realign
		077	Move Toward
		078	Retarget
08	Comment	080	Comment
		081	Express
		082	Declare
		083	Hint
		084	Signal
		085	Take Note of
		086	Question
		087	Reply
		088	Respond
		089	Express Concern/Express Displeasure
09	Conduct	090	Conduct
		091	Compete with/for
		092	Negotiate
		093	Export
		094	Import
		095	Trade with
		096	Bargain
		097	Manipulate/Play-Off
		098	Match
10	Consult	100	Consult
		101	Inquire
		102	Mediate
		103	Moderate
		104	Persuade
		105	Urge
		106	Discuss
		107	Communicate
		108	Study/Evaluate
		109	Advise

11	Decrease	110	Decrease
		111	Lessen
		112	Diminish
		113	Reduce
		114	Weaken
		115	Split/Fail to Support
		116	De-escalate
		117	Dissipate
12	Deny	120	Deny
		121	Refuse
		122	Decline
		123	Prohibit
		124	Dispute
		125	Discourage
		126	Exclude
		127	Embargo
		128	Withhold Action
		129	Discriminate
13	Force	130	Force
		131	Destroy/Defeat
		132	Compel
		133	Press for
		134	Retreat/Withdraw
		135	Incite
		136	Airlift
		137	Sabotage
		138	Deploy
		139	Agitate
14	Grant	140	Grant
		141	Provide
		142	Give/Send
		143	Contribute
		144	Comply
		145	Sell
		146	Equip
15	Increase	150	Evolve
		151	Expand/Increase
		152	Enlarge
		153	Intensify/Accelerate
		154	Advance
		155	Strengthen/Upgrade
		156	Augment/Build-up
		157	Gain
		158	Reinforce
		159	Escalate

16	Initiate	160	Create
		161	Establish/Initiate
		162	Organize
		163	Embark
		164	Enter into
		165	Commence/Start
		166	Announce
		167	Launch
		168	Raise
		169	Approach
17	Maintain	170	Maintain
		171	Continue/Remain
		172	Persist
		173	Integrate
		174	Guarantee
		175	Supply
		176	Support
		177	Retain
		178	Wait and See
		179	Do Nothing
18	Peace	180	Peace
		181	Appease
		182	Cease-Fire
		183	Cease Hostilities
		184	Conciliate
		185	Bring to Terms
		186	Disarm
		187	Pacify
		188	Reconcile
19	Possess	190	Possess
		191	Have
		192	Own
		193	Occupy
		194	Gain Operational Capability
		195	Obtain
		196	Store
20	Propose	200	Propose
		201	Offer/Extend
		202	Request
		203	Invite
		204	Assume
		205	Invoke
		206	Claim
		207	Call for
		208	Plan/Plan for
21	Protest	210	Protest
		211	Complain
		212	Hinder
		213	Disrupt
		214	Demonstrate
		215	Demand

22	Pursue	220	Pursue
		221	Seek/Ask for/Appeal
		222	Carry out
		223	Strive for
		224	Proceed
		225	Focus on
23	Rely on	230	Rely on
		231	Believe
		232	Trust
		233	Credit
		234	Depend
		235	Have Faith in
		236	Reassure
24	Reject	240	Reject
		241	Rebuff
		242	Ignore/Unconcerned
		243	Repudiate
		244	Veto
		245	Reconsider
		246	Reverse
		247	Slow Down
		248	Isolate
		249	Oppose/Disagree
25	Restore	250	Restore
		251	Replace
		252	Overhaul/Repair
		253	Regenerate
		254	Renew
		255	Re-deploy
		256	Resume
		257	Re-institute
		258	Return
		259	Regain
26	Relinquish	260	Relinquish
		261	Yield
		262	Capitulate
		263	Abandon
		264	Release
		265	Withdraw/Evacuate
		266	Turn
		267	Relax
		268	Loosen
27	Take Countermeasures	270	Counteract/Intervene
		271	Contest
		272	Resist
		273	Block Sales
		274	Divide
		275	Orient
		276	Transform
		277	Diversify
		278	Prevent
		279	Confront

28	Terminate	280	End/Terminate
		281	Cease
		282	Stop
		283	Break off
		284	Lose
		285	Complete
		286	Consume
		287	Eliminate
		288	Fail/Stalemate
		289	Remove
29	War	290	Attack
		291	Invade
		292	Bomb
		293	Sink
		294	Declare War
		295	Mobilize
		296	Combat
		297	Engage in Battle
		298	Wage War
		299	Put on Alert

SUBSTANTIVE CODES

General Category		Specific Breakdown	
01	Agriculture	010	Crop Production/Failure
		011	Plant and Animal Diseases
		012	Food Supply/Price
		013	Fertilizers
		014	Irrigation
02	Domestic Economics	020	Inflation
		021	Unemployment
		022	Labor
		023	Productivity
		024	Investment
		025	Credit
		026	Recession/Depression
		027	Strategic Industry
		028	Economic Development
03	Domestic Instability	030	Political Unrest
		031	Communist Take-over
		032	Civil War
		033	Racial Disturbances
		034	Insurrections
		035	Secessionist Movement
		036	Guerrilla Warfare (unaided by outside groups)
		037	Coups d'etat
		038	Purges
04	Domestic Political Processes	040	Changes of Government
		041	Elections
		042	Leadership Changes
		043	Ideologies
05	Energy	050	Conservation/Use
		051	Availability/Access
		052	Resource Development
		053	Fossil Resources
		054	Geothermal/Solar
		055	Nuclear Power
		056	Economic Dependence
		057	Water Resources
		058	Production
06	Environment	060	Pollution
		061	Weather Modification
		062	Water Treatment
		063	The Oceans
		064	The Atmosphere
		065	Natural Disasters

07	Force Readiness/Deployment	070	Manpower/Strength
		071	Base Rights
		072	Routine Force Deployment
		073	Operational Readiness
		074	Withdrawal/Reduction of Forces
		075	Increase of Forces
		076	Alert of Forces
		077	Operational Planning
		078	Projection of Force
		079	Balance of Force
08	Health and Welfare	080	Population Migration
		081	Population Growth
		082	Famine
		083	Epidemics
		084	Refugees
		085	Nuclear Accident/Incident
		086	Drug Control
		087	Mental Health
		088	Education
		089	Social Services
09	Intelligence Operations	090	Covert Intelligence
		091	Reconnaissance
		092	Satellite Surveillance
		093	Mapping
		094	Technical Intelligence
10	International Alignment	100	Alliances/Alignment
		101	Agreements/Understanding
		102	Treaties
		103	Ideologies of Major Actors
		104	US-NATO Disputes/US-EEC Political Disputes
		105	PRC-USSR Disputes
		106	East-West Disputes
		107	DC-LDC Disputes
		108	Other Disputes
		109	Joint Peacekeeping Effort
11	International Conflict/ Violence	110	Conventional War
		111	Unconventional Wars (with foreign involvement)
		112	Nuclear War
		113	Show of Force
		114	Naval Engagements
		115	Ground Combat Operations
		116	Air Attack/Action
		117	Bombardment
		118	Cease-Fire
		119	Surrender/Defeat

12	International Finance	120	Balance of Payments
		121	Currency Conversion
		122	Aid and Assistance Programs
		123	World Inflation
		124	World Recession/Depression
		125	Investment
		126	Economic Influence/Penetration
13	International Negotiation	130	Peace Negotiations
		131	Strategic Weapons Negotiations
		132	Conventional Arms Negotiations
		133	Size of Forces Negotiations
		134	Base/Territorial Negotiations
		135	Transit/Landing Negotiations
		136	Economic Negotiations
		137	General Negotiations
		138	Technological Negotiations
14	International Trade	140	Trade Agreements
		141	Cartels
		142	Embargoes
		143	Trade Restrictions
		144	Tariff
		145	Fishing Rights/Agreements
		146	Balance of Trade
		147	Critical Materials
		148	Technological Exchange/Transfer
15	Legal Processes/Justice	150	Law of the Sea
		151	Geneva Protocols
		152	Interpol
		153	Asylum
		154	Extradition
		155	Human Rights
		156	International Law
16	Military Assistance	160	Grants/Aid
		161	Arms Sales
		162	Training/Advisors
		163	Troop Support
		164	General Assistance
		165	Troops Sent
17	Military Capabilities	170	Overall Expenditures
		171	Strategic Delivery Systems
		172	Strategic Weapons Systems
		173	Strategic Defensive Systems
		174	Ground Systems
		175	Naval Systems
		176	Air Systems
		177	Communications
		178	Logistics/Support Systems
		179	Any Countermeasures

JCS WORLD REGIONS

1   North America

2   Central and South America

3   Western Europe, the Mediterranean, and the Atlantic

4   Eastern Europe and the Soviet Union

5   Middle East and North Africa

6   South Asia, Indian Ocean and Sub-Saharan Africa

7   Pacific Area and East Asia

8   Polar Regions (Arctic and Antarctic)

9   Space

0   Other, Multiple Regions, the World